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THE CLIMATE OF ALASKA

BY

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CLIMATE.

By Cleveland Abbe, Jr.

INTRODUCTION.

No discussion of the geography of a region is complete without some mention of the climate, for while on one hand climate is determined in a large measure by the relief of the earth's surface, on the other hand the surface features are the resultants of the atmospheric forces working upon the rocks of the earth's crust. The interest in climate does not end here, however, for the climatic conditions, as much as the topography and geographic position, determine the occupation and development of a region by man. Temperature and precipitation are as important as geographic features and natural resources. The relation of climate to animal and vegetable life, and hence to man's occupation of any portion of the earth's surface, is too evident to need special mention.

The following pages will be chiefly devoted to the climatic problems which are of special import to the settler, prospector, and miner, but it is hoped that the data compiled and the conclusions reached may not be without interest to the student of North American meteorology.

Ignorance of Alaska's varied climates has been widespread and has led to not a few blunders, both in the administration of the territory and also in plans for its investigation and development. Had accurate information been in the possession of the public at the time of its purchase, concerning its varied climatic provinces, which in a large measure control its animal and vegetable life and conditions of travel, a different feeling would have prevailed concerning that much-criticised transaction. The subsequent development of its resources might have been accomplished with a far smaller expenditure of time, money, and even of human life.

Though Alaska has been in our possession for nearly forty years, and part of its area has been known to whites for upward of two centuries, the mass of the public is profoundly ignorant of its climatic features. Even well-informed people still speak of it as a land of ice and snow, and there are few who realize that a part of its Pacific coastal province has a temperate climate.

METEOROLOGIC OBSERVATIONS.

During the Russian occupation, except in a few instances, there seem to have been no systematic efforts made to record accurate meteorologic observations. The best records during this period were kept by the Russian missionaries at their mission stations, Unalaska (Iliuliuk) and Ikogmut, and by the Russian Government officials at Sitka. Other records of less extent were made by the many explorers, travelers, and traders who visited the region. After the transfer of the territory to the United States the surgeons at United States army posts kept meteorologic records in connection with the post hospitals.

In 1878 and 1879, soon after the organization of the United States Weather Bureau, first under the Signal Corps of the army, later as a bureau of the Department of Agriculture, a few first-class observing stations, together with several voluntary stations of lower order, were established in Alaska. Most of these have been located along the coast or on the neighboring islands, and records

of the great interior region have been dependent on the more or less incomplete data gathered by exploring and surveying parties and by voluntary observers, including traders and missionaries. The most important records from transient stations are those kept by the "International Arctic Expedition" (1882–83) at Utkiavi on Cape Smyth, by the two Coast and Geodetic Survey parties sent out (1880–1891) to determine the intersections of the one hundred and forty-first meridian with the Yukon River, by the Western Union Telegraph Company Expedition (1865–1867), and by the Geological Survey exploring parties (1898–1903). The demand for study of the agricultural possibilities of Alaska led to the establishment in 1898 of a special Alaska division of the experiment-station service of the Department of Agriculture, and since that year reliable observations in the district have been multiplying.

SOURCES OF MATERIAL.

The observations made up to the end of 1877 have already been summarized by Dall and Baker, and published, together with a very full bibliography, by the Coast and Geodetic Survey.[a] The results of observations made at six United States army posts, from 1861 to 1871, and the continuous series of Russian and American observations at Sitka, from 1847 to 1874, have been summarized by C. A. Schott,[b] and published in two volumes by the Smithsonian Institution. They form valuable supplements to the earlier monograph by Dall and Baker.

In the following pages will be summarized the most important results of the observations made subsequent to the publication of Dall and Baker's work, and features of most interest to those concerned in the economic development of the country will be particularly emphasized.

The material summarized in the accompanying tables was taken from the manuscript records covering the period from 1868 to the present time, in the custody of the United States Weather Bureau. Thanks to the courtesy of the Chief of the Weather Bureau, and the chief of the records division of the Weather Bureau, the writer was able to consult all the records now collected by the Bureau and deposited in its vault. These records were made by observers who may be grouped in four classes—post surgeons at regular United States army posts, regular Signal Service or Weather Bureau observers, voluntary observers supplied by the Weather Bureau with instruments, and members of various expeditions.

METHODS OF OBSERVATION.

The accuracy of the observations here used and the methods of making them may be most conveniently discussed for each of the elements.

TEMPERATURES.

The temperatures recorded by the army post surgeons were observed by means of standard instruments (type not known), three observations being made daily, 7 a. m., 2 p. m., and 9 p. m. These stations seem also to have been supplied in some cases with self-registering maximum and minimum thermometers, but the

[a] Dall, W. H., and Baker, M., Pacific Coast Pilot, Coast and Islands of Alaska, Appendix I, Meteorology and Bibliography, 2d series, Washington, 1879.

[b] Schott, Charles A., Tables, distribution, and variations of the atmospheric temperature in the United States, etc.: Smithsonian Contrib. Knowl., vol. 21, No. 277, Washington, 1876, pp. 10, 11, 124. Tables and results of the precipitation of rain and snow in the United States, etc.: Ibid., vol. 24, No. 353, Washington, 1881, 2d ed., pp. 11, 113.

records of such thermometers in the only case where their use was noted were so out of harmony with the tri-daily observations that they have not been used in this compilation. These observations record the temperature to two decimal places. Since most of the other records record temperature to the first decimal place only, the temperatures, as here published, have all been reduced to the nearest whole degree for the sake of uniformity. The maximum and minimum temperatures from the stations occupied by army posts represent only the maximum and minimum observed temperatures, and are indicated in the tables by (*). Concerning the exposure of the thermometers at army posts in Alaska, the following quotation from Dall and Baker is all that has been learned. They say,[a] "The observations [at Sitka] recorded in the Manuscript Meteorological Register U. S. Army were made in front of the hospital, which, facing southeast, fronts on Eastern Harbor. The instruments hung in an open latticework box of the ordinary construction for the reception of meteorologic instruments and at an elevation of 13½ feet above the level of the sea."

The temperature observations at Signal Service or Weather Bureau stations, whether at a regular station or by voluntary observers, are always made with standardized instruments issued by the central office in Washington, and have been accepted as correct, so far as the instruments were concerned. The instruments were presumably exposed in the standard Weather Bureau instrument shelter, and the observing hours were, during the early years, 7 a. m., 2 p. m., 9 p. m., but for the records of the voluntary observers, which were made by means of self-registering maximum and minimum thermometers, only one observation daily, made usually at 8 a. m., was required. In some cases, where the one or the other of the registering thermometers was broken, the missing extreme temperatures were supplied by observations at noon or at 7 a. m. When these latter observations seemed to be approximately true extreme temperatures they were admitted as part of the material for the table, but always with a note indicating at what hours they were made. Observations made by the voluntary observers of the Weather Bureau are made by means of standard instruments issued to those observers. These instruments are always accurately compared and corrected before being issued, and a card of corrections furnished, but in few, if any, cases is information at hand as to whether the proper corrections have been applied. It is believed, however, that all the results presented in the accompanying tables are reliable to within ½° F.

METHODS OF OBSERVING PRECIPITATION.

The precipitation data obtained from the Government army posts were presumably based upon observations made with the so-called conical De Witt gage,[b] which was issued by the Army to post hospitals. This gage, which is in the shape of an inverted cone, was recommended[c] to be exposed by cutting a hole in a board of sufficient diameter to allow the conical gage to come down just flush with the upper surface of the board. Such an exposure might cause these gages to be classed among "shielded rain gages," and would be very favorable to an accurate registration of rainfall if the board with its gage were exposed

[a] Pacific Coast Pilot, p. 60.

[b] De Witt, S., Description of the nine-inch conical rain gage: Am. Jour. Sci., New Haven, 1st ser., vol. 22, 1832, pp. 321-324 (fig.).

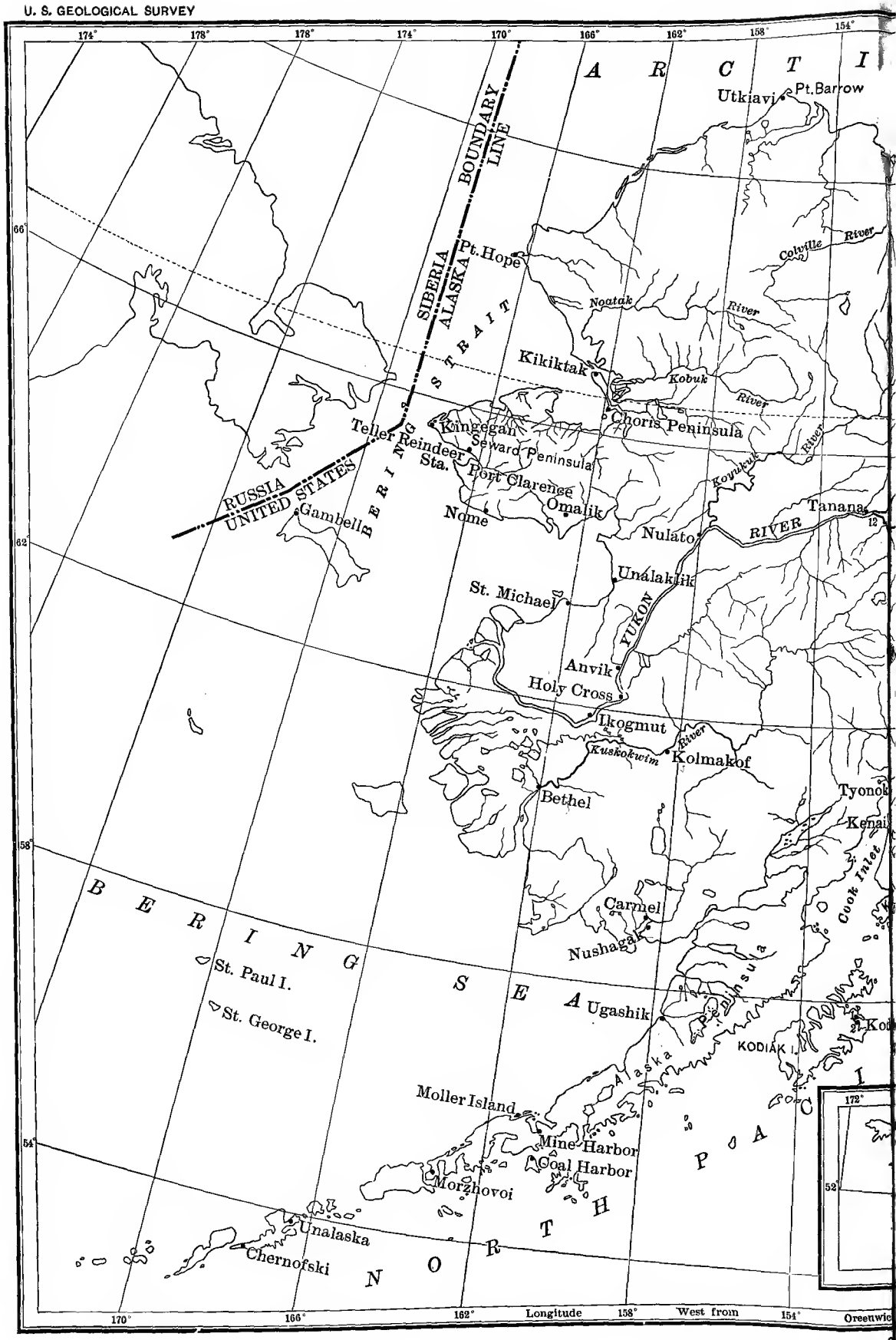
[c] Schott, C. A., Smithsonian Contrib. Knowl., vol. 24, No. 353, p. xi.

at a sufficient distance from surrounding objects. As to the actual exposure of the gages at Alaskan posts nothing is known. The rainfall was measured at army posts at the close of each storm, or more frequently if necessary to prevent the gage overflowing before it was read. Usually the time of beginning and ending of the rainfall was given, but only one measurement was made; namely, at the close of the storm, so that the given amounts of precipitation in the records often were for rainfalls extending over two or three days. In some cases, however, readings were made at 9 a. m. daily, as well as at the end of the storm, so that it was possible to determine the daily rainfalls more readily. The table on pages 162–165 shows the mean total rainfall for each month to midnight of the last day of the month. In the original army records a rainfall extending over the last day or two of one month and the first day or two of the next month was often not recorded until the end of that rainfall. In the earlier averages, published by Schott and Dall, no account was taken of this overlapping of the rainfall records. In the present work an attempt has been made to redistribute the rainfall so that that portion of it falling in the preceding month should be credited to that month and not to the following month. This redistribution was made according to the following plan: When the hours of beginning and ending of rainfalls or showers were given in the records the total rainfall was divided by the number of hours, and thus the amount of rain on each day was determined. When daily readings were made and no times of beginning and ending were recorded the readings were always allowed to stand as they were given. From the daily rainfalls as thus estimated was selected the greatest of each month for entering in the table on pages 166–167. The redistribution of rainfall just described became of particular importance in calculating the maximum daily rainfall for any month, since the daily measurements of rainfall are not usually given in the army records.

In cases of rainfall records made by voluntary or regular observers of the Weather Bureau, the instructions required the observer to record the rainfall every day, and it has not been necessary, in any case, to redistribute the rainfall among the days on which it did fall, or is supposed to have fallen. It has, however, been necessary in several cases to carefully study the records in order to determine whether or not the snowfall, as measured, was melted and included in the given total precipitation for the day, and for the month. The records, as they were found at the Weather Bureau, did not always seem to have made this inclusion, but where the necessary data were available, they were always corrected by the writer, so that the totals include rain and melted snow. In several cases it was not possible to make these corrections, because of the insufficiency or inaccuracy of the data, but these cases have not been used in compiling the present totals. It should, furthermore, be stated that the totals on rainfall are based only upon records for whole months, any incomplete months having been omitted in making up the means there given. In compiling the table of maximum daily rainfall (pp. 166–167), however, the incomplete monthly records have been used when the record for an incomplete month included a maximum figure.

In conclusion, it may be stated that the means given are based upon a series of observations of such varying lengths from station to station that they should be used only with the greatest caution. Only means based upon a series of observation extending over the same years, or means reduced to the same series of years, should

U. S. GEOLOGICAL SURVEY



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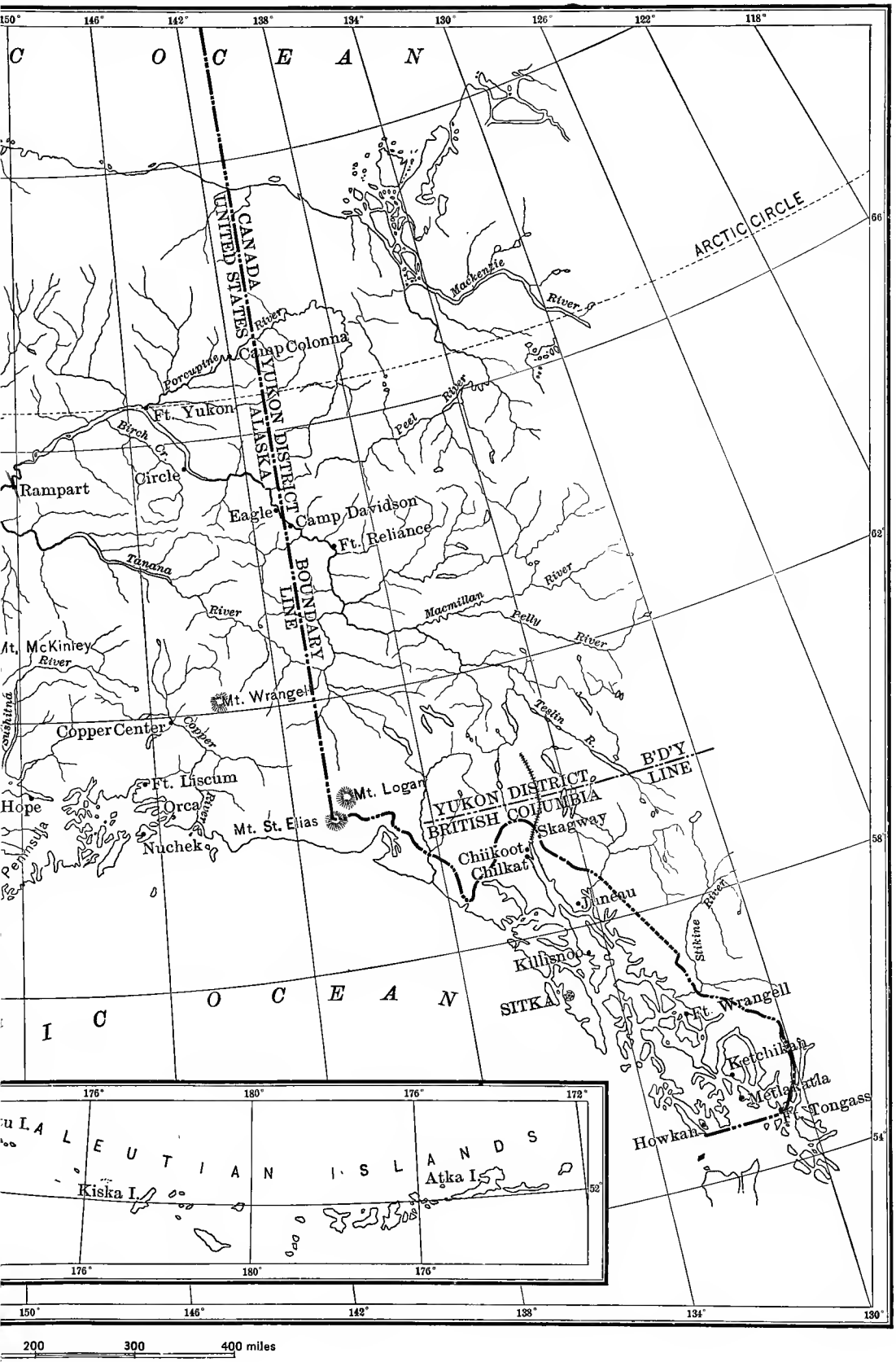


ROLOGIC STATIONS.

be used in making any accurate comparative study of climate or for making any accurate estimates, plans, etc., for water resources.

The variation in rainfall, both daily, monthly, and annual, is so great at any station that only after a long series of observations have been obtained are we justified in drawing any definite conclusions concerning the rainfall to be expected. Unfortunately, the records for most stations in Alaska extend over short periods of years, and in many cases do not include even one complete year. This incompleteness of most of the records is expressed by the last column of the table on page 167, where the years and months of the record are given. In the column headed "years," the number of whole years is given; in the column headed "months," the number of scattered months over which the record stretches are given. In many cases, the number of months of record often exceeds the number of months in a year, but this simply indicates that the records are based upon observations made in many scattering months. The record at Eagle furnishes a good illustration of this, where we find that the record covers fifty-two months but *no* years.

The rainfall data from Weather Bureau and voluntary stations are based upon observations made daily by means of the standard Weather Bureau cylindrical gage, and with one or two exceptions are believed to include melted snowfall as well as rain.

The rainfall records kept by the commercial companies have not been incorporated in the accompanying tables, because no information has been received concerning the type of gage used by them.

RECORDS OF FROST AND ICE.

Records of the dates of occurrence of first and last frosts in fall and spring and the dates of first and last killing frosts were made very sporadically until the establishment of the experiment stations. The records show many gaps and omissions. The table presenting the results of these observations shows their character better than verbal description.

Dates of opening and closing of streams and harbors have also been kept intermittently by various volunteer observers, and their results have been incorporated in a separate table. Since observations on frosts and stream ice require no apparatus, they are perhaps, so far as they are given, worthy of more confidence than some of the instrumental observations, for many voluntary observers were without special preliminary training.

DESCRIPTION OF THE SYNOPTIC TABLES.

The results of the climatologic observations are presented in general tables, and figures for the monthly rainfall at the individual stations are added.

Locations of stations.—The following table presents an alphabetical list of the stations from which records have been obtained. For each station is given the latitude and longitude, the elevation above mean sea level, when known, the limiting dates of the period over which the observations extended, the number of whole years and months during which observations were carried on, and organizations by which the records were made (see also Pl. XVIII).

The latitudes and longitudes were first taken from the official records of the United States Weather Bureau and from Dall's Pacific Coast Pilot. They were then compared with the large scale maps of the Coast and Geodetic Survey and the

United States Geological Survey, and in some instances with maps of special districts of Alaska published by the United States Geological Survey.

Alaskan meteorologic stations, with location and length of record at each.

Reference number.	Station.	Latitude (north).	Longitude (from Greenwich).	Elevation.	Length of record. Limiting dates. From—	To—	Yrs.	Mos.	Observations by—	Authority for latitude and longitude.
		° ′	° ′	Feet.						
43	Anvik	62 37	160 08 W.	R. 40	Sept., 1882	Mar., 1891	0	44	S. S.; W. B. V	
20	Atka Island	52 15	174 15	15	May, 1879	Aug., 1886	3	16	S. S	
22	Attu Island	52 68	172 26	8	July, 1880	May, 1881	0	11	S. S	
23	Bering Island	52 12	165 55 E.	20	May, 1882	May, 1886	3	13	S. S	
26	Bethel Mission	60 58	161 52 W.	.....	Nov., 1885	Feb., 1886	0	4	W. B. V.?	U. S. G. S., 1898.
38	Camp Colonna	67 25	140 59	650	Oct., 1889	July, 1890	0	10	C. and G. S.	C. and G. S., 1896.
35	Camp Davidson	64 41	140 54	.....	May, 1890	June, 1891	0	14	C. and G. S.	C. and G. S., 1896.
25	Carmel Mission	58 57	158 21	.....	Jan., 1902	July, 1902	0	6	W. B. V	U. S. G. S., 1898.
37	Circle	65 50	144 04	.....	Nov., 1898	Aug., 1900	1	20	P. S	U. S. G. S., 1904.
17	Coal Harbor	55 20	160 38	30	Sept., 1889	Oct., 1902	10	28	W. B. V	U. S. G. S.
47	Copper Center	61 58	145 20	1,005	July, 1902	Dec., 1902	0	6	W. B. V	U. S. G. S., 1903.
36	Eagle (Fort Egbert)	64 45	141 10	573	Oct., 1882	Dec., 1902	0	28	W. B.; W. B. V.	U. S. G. S., 1899.
24	Fort Alexander	58 57	158 21	.....	Aug., 1881	June, 1886	2	25	S. S	U. S. G. S.
10	Fort Liscum	61 05	146 20	.....	Jan., 1901	Dec., 1902	2	00	W. B. V	U. S. G. S., 1900.
34	Fort Reliance	64 10	139 30	R. 30	Sept., 1882	May, 1886	0	18	S. S	C. and G. S.
1	Fort Tongass	54 46	130 30	20 to 30	June, 1868	Sept., 1870	1	16	P. S	P. C. P.
2	Fort Wrangell	56 28	132 20	30 to 36	May, 1868	Aug., 1882	2	40	P. S.; S. S	C. and G. S., 1869
29	Gambell	63 50	171 25	30?	Oct., 1894	Sept., 1902	2	33	W. B. V	C. and G. S.
44	Holy Cross	62 16	159 50	500?	Oct., 1893	Aug., 1901	6	21	W. B. V	
45	Ikogmut	61 56	160 43	.....	Aug., 1883	May, 1886	0	23	S. S. V	U. S. G. S., 1898.
4	Juneau (1)	58 19	134 28	.....	June, 1881	Feb., 1897	2	39	S. S. V.; W. B. V.	
5	(2) (wharf)	58 19	134 28	.....	Dec., 1898	Dec., 1902	4	1	W. B. V	
11	Kenai	60 32	151 19	80?	June, 1870	Dec., 1902	5	31	P. S.; S. S.; W. B. V.	P. C. P.
31	Kikiktak (Friends' Mission).	67 00	162 00	.....	Sept., 1897	Dec., 1902	3	15	W. B. V	
3	Killisnoo	57 22	134 29	20±	May, 1881	Dec., 1902	16	43	S. S.; W. B. V	
21	Kiska Island	52 00	177 25 E.	20	May, 1885	Apr., 1886	0	12	S. S	C. and G. S.
13	Kodiak (1)	57 48	152 25 W.	50?	Oct., 1868	Nov., 1899	1	35	P. S.; W. B. V	C. and G. S.
14	(2) (Woody Island).	57 48?	162 25?	.....	Jan., 1900	Dec., 1902	0	34	W. B. V	
46	Kolmakof	61 30	158 69	40, 80	July, 1882	May, 1886	0	41	S. S. V	U. S. G. S., 1898.
16	Mine Harbor	55 46	160 40	105	Aug., 1902	Sept., 1902	0	2	W. B. V	
18	Morzhovoi	55 03	163 10	50?	Nov., 1881	May, 1883	0	18	S. S	
8	Nuchek	60 23	146 40	60?	May, 1883	Aug., 1884	0	16	S. S	U. S. G. S., 1900.
42	Nulato	64 41	157 58	15?	Oct., 1882	Apr., 1896	0	16	S. S.; W. B. V	U. S. G. S., 1903.
28	Omalik (mine)	65 02	162 40	700	Jan., 1884	Apr., 1885	0	12	S. S	U. S. G. S.
9	Orca	60 35	145 40	.....	Sept., 1899	Dec., 1902	1	20	W. B. V	C. and G. S.
32	Point Hope	68 26	166 38	26 to 28	Aug., 1894	July, 1896	1	12	W. B. V	C. and G. S.
39	Rampart	65 30	150 15	.....	Sept., 1900	Jan., 1902	0	7	W. B. V	U. S. G. S., 1902.
27	St. Michael	63 28	162 10	30 to (?)	July, 1877	July, 1901	7	28	S. S.; W. B. V	
30	St. Paul Island	57 15	170 10	40	Oct., 1869	May, 1883	1	35	S. S	
7	Sitka	57 03	135 19	13 to 63	Nov., 1867	Dec., 1902	17	44	P. S.; S. S.; W. B., W. B. V.	
6	Skagway	59 28	135 20	.....	Nov., 1898	Dec., 1902	0	31	W. B. V	
40	Tanana (1) (Fort Adams).	65 10	152 45	200	Aug., 1882	May, 1886	0	27	S. S	
41	(2) (Fort Gibbon).	65 12	152 00	.....	Aug., 1901	Dec., 1902	0	13	W. B. V	U. S. G. S., 1899.
12	Tyonok	61 03	151 10	.....	Nov., 1898	Dec., 1902	4	2	W. B. V	U. S. G. S., 1902.
15	Ugashik	57 35	157 60	25?	Aug., 1883	Jan., 1886	2	4	S. S. V	
19	Unalaska	53 52	166 31	10, 13, 15	Sept., 1878	May, 1886	4	28	S. S	
33	Utkiavi (Point Barrow).	71 17	156 40	17	Oct., 1881	Aug., 1902	1	23	S. S.; W. B. V	

NOTE.—In "Elevation" column "R" means above river level, instead of sea level.

Each station in this alphabetical list is preceded by a reference number which is used in the succeeding tables. As the stations are grouped in succeeding tables by climatologic provinces, the names are not in alphabetic order.

Table of extreme temperatures.—The table on page 159 shows the absolute maximum and absolute minimum temperatures which have been observed at each of the stations during the period of years indicated in the last two columns of the table and the appropriate remarks. In the column headed "Extremes," are given the highest and lowest temperatures observed at each station within the period indicated, and also the difference, expressed in degrees Fahrenheit, between the highest and the lowest temperatures. The "Extremes" column, therefore, shows the extreme temperatures that have been experienced at each station, but not the extremes that might be expected within any one year. The table is of particular interest, as it shows the extreme temperatures observed in each month at each station and gives some idea of the amount and distribution of the extreme ranges of temperature over Alaska. These temperatures, however, have rarely been attained twice at the respective stations. They show what must be provided against in extreme cases, rather than what may be expected in an average year.

Table of precipitation.—The table on page 162 shows the average monthly and annual precipitation, including melted snow, and also the average number of days having a precipitation of 0.01 of an inch or more. This table may be expected to give, as far as the lengths of the individual records permit, a fair idea of the geographic and seasonal distribution of rain and melted snow over Alaska. It also affords material for the estimation of the average intensity of the monthly and annual rainfalls, since the mean monthly rainfall divided by the mean number of days with rain in the month gives the average amount of rain for each rainy day. The same may also be said for the column headed "Year." Typical rainfalls are also shown graphically on Pl. XIX.

Table of heavy rainfalls.—The table on page 166 is supplementary to the last-mentioned table, and shows the absolute maximum recorded rainfall in twenty-four hours during each month of the period over which the observations extend. The chief interest of this table lies in the fact that it enables the heaviest rainfalls of short duration in Alaska to be located and compared. It should be of considerable interest to those interested in agriculture and water powers, since the character of the rainfall is very important in investigations in both those lines.

Table of rainy days.—The table on page 168 gives the maximum and minimum number of rainy days observed for each month and year, and repeats the average number of rainy days for each month in the year, already given.

This table is particularly interesting, as it shows the extreme fluctuations in the raininess of any district; but its value varies according to the number of observations which have been made.

Table of dates of frosts.—In the table on page 171 are shown the dates of the earliest killing frost in the fall and the last killing frost in the spring for all those stations at which these data were attainable. This table is, therefore, of prime interest to those who are interested in mining or in agricultural pursuits, since it serves to give an approximate idea of the length of the working and the growing seasons.

Tables of stream and harbor ice.—On pages 174 to 176 observations on the occurrence of ice in streams and harbors have been brought together in tabular form, and will prove of most use to those who are interested in navigation. The tables also show the approximate times at which high water and low water may be expected.

CLIMATIC PROVINCES OF ALASKA.

The climate of Alaska is by no means so uniformly arctic as is usually believed, but is such as would naturally result from its geographic position, its extent, and its varied topographic features.

The mere fact that Alaska stretches through 20 degrees of latitude and 54 degrees of longitude would alone be sufficient to bring about marked climatic differences. The northernmost point is within 18 degrees of the pole, while the southernmost lies in about the latitude of Liverpool, England. Its easternmost part, lying under the shelter of the coast ranges of British Columbia and bathed by the warm waters of the Pacific, is 2,500 miles distant from the westernmost of the Aleutian Islands, in the vicinity of the Siberian coast and the cold Arctic current.

Three seas, each with its own conditions of temperature and ice-covering, border Alaska and contribute to the multiplicity of climatic provinces. On the south it is washed by the warm Pacific; on the west it fronts upon the Bering Sea, which is essentially a body of cold water, whose northern half is covered with ice during six months of the year; while its northern coast is for nine months of the year locked in the ice of the Arctic Ocean.

The two mountain ranges that traverse Alaska from east to west divide the country into districts which differ very sharply from one another, both in temperature and in precipitation.

Last, but not least, may be mentioned the fact that Alaska lies in the northwest corner of a great land area, the North American continent, and forms a portion of the north and east coast of a still greater water body. This fact alone is sufficient to render Alaskan climate of decided interest to all students of climatology, as well as to give it peculiar features.

Previous studies of the climate of Alaska, as well as the experience of travelers, showed that the region may be divided into climatologic provinces very closely coincident with the physical provinces already discussed in foregoing chapters. The latest observations do not materially modify these divisions, but permit a somewhat more detailed subdivision to be made of one or two of the provinces. Alaska is here divided into eight climatic provinces, whose names and boundaries are as follows:

Pacific coast climatic province.—The Pacific coast province reaches from Dixon Entrance to Kodiak Island and includes all the islands of southeastern Alaska and the region lying between the ocean and the first range of mountains along the coast from Cross Sound to the beginning of the Alaska Peninsula. This is essentially a temperate and humid region. (See Nos. 1–14, tables, pp. 158 et seq.)

Alaska Peninsula climatic province.—The Alaska Peninsula climatic province includes the stations of Ugashik, Mine Harbor (Herendeen Bay), Cold Harbor (Unga Island), and Morzhovoi. (See Nos. 15–18, tables, pp. 158 et seq.) The climate here

differs but in degree from the first province. It is in general somewhat more humid and milder than in the Cook Inlet district, approaching more nearly that of the Sitka district. The temperature ranges are more nearly of the insular type.

Aleutian Islands climatic province.—The Aleutian Islands province includes the Aleutian Islands, to which, for the sake of comparison, Bering Island, of the Commander group, has been added. (See Nos. 19–23, tables, pp. 158 et seq.). The climate of this province is characterized by moderate temperatures, limited ranges in temperature, and moderate humidity.

Bering Sea coast climatic province.—The Bering coast province begins at Fort Alexander in the northeast corner of Bering Sea and includes all the Bering Sea coast to Cape Prince of Wales. (See Nos. 24–28, tables, pp. 158 et seq.). Its climate is characterized by greater temperature ranges than are experienced in the foregoing provinces, while the precipitation is considerably less.

Bering Sea Islands climatic province.—This province is evidently related to the Bering coast province, but differs slightly from it in ranges of temperature. It includes the islands of St. Lawrence (Gambell), St. Paul, St. George, and St. Matthew. (See Nos. 29 and 30, tables, pp. 158 et seq.).

Arctic coast climatic province.—The Arctic coast province includes the Arctic coast stations from Cape Prince of Wales northward to Point Barrow and beyond, and southward to the Rocky Mountains. It is characterized by a long period of cold weather, which prolongs the winter through two-thirds of the year, and by a precipitation of about the same amount as that prevailing over the arid areas of Nevada and Utah. (See Nos. 31–33, tables, pp. 158 et seq.).

Interior climatic province.—The Interior province includes the central plateau region between the Rocky Mountain system on the north and the Pacific Mountain system on the south. It is characterized by great extremes of temperature and a very moderate rainfall, such as prevail in eastern Oregon and Washington. Thirteen stations included in this province are listed as Nos. 34–46 in the climatic tables (pp. 158 et seq.). Of these stations, Fort Reliance, Camp Davidson, Eagle (Fort Egbert), Circle, and Camp Colonna are located in the eastern section; Rampart, Fort Adams (Tanana 1), and Fort Gibbon (Tanana 2) are in the central section; and Nulato (St. Peter Mission), Anvik, Holy Cross (mission), Ikogmut, and Kolmakof are in the western section.

Copper River Plateau climatic province.—The station of Copper Center, which is given as the last, is here classed under a provisional province, the Copper River Plateau, since it shows some features characteristic of the interior climate and some suggesting the Pacific coast climate. (See No. 47, tables, pp. 158 et seq.).

17211—No. 45—06——10

Table of mean temperatures for certain

Station.	Latitude.	Longitude.	Elevation.	Jan.	Feb.	Mar.	Apr.	May.	June.
Coast.	° ′	° ′	*Feet.*	°*F.*	°*F.*	°*F.*	°*F.*	°*F.*	°*F.*
Fort Tongass	54 46	130 30	20–30	37.8	36.9	42.4	46.3	53.0	57.8
Fort Wrangell	66 30	132 28	25–35	26.2	30.8	31.6	42.7	49.3	55.3
Sitka	57 3	131 19	63	31.4	32.9	35.6	40.8	47.0	52.4
Do	.....	.....	.....	34.2	33.0	37.2	41.9	46.9	51.6
Juneau	58 19	134 28	.....	27.5	24.7	33.5	40.1	47.7	53.6
Valdez	.....	.....	.....	23.8	15.5	30.8	31.6	39.4	49.6
Tyonok	61 3	151 10	.....	5.41	15.3	23.6	37.7	43.1	53.1
Kodiak	57 48	152 19	.....	30.0	28.2	32.6	36.3	43.2	49.5
Unalaska	53 53	166 32	13	30.0	31.9	30.4	35.6	40.9	46.3
Do	53 43	166 24	13	33.5	30.5	32.6	35.2	40.4	45.9
St. Michael	63 28	161 48	30	7.4	− 2.3	8.9	19.9	33.1	46.3
Port Clarence	65 20	166 30	.....	− 7	− 7	5	13	32	42
Utkiavi (Point Barrow)	71 22	166 16	17	−17.5	−18.6	−11.8	− 1.2	21.4	32.8
Interior.									
Holy Cross (mission)	62 16	159 50	500?	− 6.4	5.8	15.6	26.0	40.9	51.5
Fort Yukon	.....	.....	.....	.....	.....	1.6	17.4	33.2	58.6
Eagle	64 45	141 10	573	−24.8	− 6.0	13.0	29.3	42.2	52.6
Foreign.									
Ottawa, Canada	45 30	76	.....	11.9	12.2	17.6	41.5	63.6	66.9
Winnipeg, Canada	50	97	.....	−11.0	− 5.0	10.5	35.5	53.6	61.5
Port Angeles, Wash	48 10	123 30	.....	34.7	36.7	41.7	45.6	50.6	54.0
Scotland	.....	.....	.....	37.1	38.4	39.4	44.1	49.0	54.8
Christiania, Norway	60 .	10 9 E.	.....	24.1	23.9	29.5	39.9	50.9	59.9
Helsingfors, Finland	60 20	25 E.	.....	20.9	18.8	26.2	34.8	44.1	56.9

[a] Compiled by A. H. Brooks from the following publications: Dall, Wm. H., Coast and Islands of Alaska: Meteorology, Appendix 1, Coast and Geodetic Survey, 1879. Reports of United States Weather Bureau. Georgeson, C. C., Agriculture in Alaska: Dept. of Agriculture, Office of Experiment Stations, Bulls. 48, 62, 82, 94, and Ann. Rept. for 1901. Jackson, Sheldon, Reports on Introduction of Domesticated Reindeer in Alaska, U. S. Bureau of Education. Collier, Arthur J., Reconnais-

Alaskan and other stations.[a]

Station.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.	Length of record.			
								Limiting dates.		Yrs.	Mos.
								From—	To—		
Coast.	°F.	°F.	°F.	°F.	°F.	°F.	°F.				
Fort Tongass	60.0	66.6	52.4	49.0	41.6	39.3	47.8	1869	.....	1	.....
Fort Wrangell	58.2	57.5	52.3	45.9	33.5	32.8	43.0	May, 1868	Aug., 1882	4	18
Sitka	55.4	55.9	51.5	44.9	38.1	33.3	43.3	Jan., 1828	Dec., 1876	45	2
Do	54.4	56.6	52.3	45.7	39.8	36.0	44.5	Apr., 1881	Sept., 1887	5	18
Juneau	56.6	55.0	49.9	41.9	31.2	29.3	40.9	May, 1883	Dec., 1896	2	28
Valdez	50.6	46.6	.....	.....	22.4	21.6	.....	1899	.....	.....	10
Tyonok	58.7	56.4	49	35.4	29.2	17	.....	.....	.....	1	.....
Kodiak	54.7	55.2	50.0	42.3	34.7	30.5	40.6	Jan., 1869	Aug., 1896	8	54
Unalaska	50.6	61.9	45.6	37.6	33.6	30.1	38.7	Oct., 1827	Apr., 1868	6	20
Do	49.6	50.3	46.0	40.4	34.6	32.8	39.3	June, 1872	May, 1886	2	32
St. Michael	53.6	51.9	43.9	30.5	15.6	4.8	26.1	July, 1874	June, 1886	11	12
Port Clarence	51	49	41	36	8	0	22	July, 1850	June, 1852	.....	.....
Utkiavi (Point Barrow)	38.1	37.9	27.8	4.4	− 6.0	−15.4	7.7	Nov., 1894 Sept., 1852	July, 1896 Aug., 1883	3	10
Interior.											
Holy Cross (mission)	57.9	51.8	42.5	29.6	12.5	1.8	.....	1899	1900	2	.....
Fort Yukon	64.2	53.6	42.6	16.9	−10.8	−26.0	.....	.....	.....	.....	10
Eagle	56.9	49.1	40.4	20.1	−10.0	− 7.4	21.2	.....	.....	1	.....
Foreign.											
Ottawa, Canada	70.4	68.7	57.7	43.1	34.5	17.8	42.1	.....	.....	1	.....
Winnipeg, Canada	64.0	61.5	49.0	36.5	18.0	3.0	29.6	.....	.....	1	.....
Port Angeles, Wash	56.6	56.8	52.7	47.7	42.4	38.2	46.1	.....	.....	1	.....
Scotland	57.1	56.6	52.8	46.4	40.6	37.8	46.1	.....	.....	1	.....
Christiania, Norway	62.6	60.6	52.7	41.9	32.1	25.6	41.9	.....	.....	1	.....
Helsingfors, Finland	61.9	58.3	50.5	43.9	33.7	21.7	39.2	.....	.....	1	.....

sance of the Cape Nome and Adjacent Gold Fields of the Seward Peninsula (by Brooks), U. S. Geol. Survey, 1901. Collier, Arthur J., Reconnaissance of the northwest part of the Seward Peninsula: Prof. Paper U. S. Geol. Survey No. 2. Schrader, F. C., Reconnaissance of a Part of Prince William Sound and the Copper River district: Twentieth Ann. Rept. U. S. Geol. Survey, part 7, pp. 369.

GENERAL CLIMATOLOGY OF ALASKA.[a]

The Alexander Archipelago and adjacent parts of the mainland forming southeastern Alaska have the most temperate and humid climate of the Territory. The moisture-ladened winds of the Pacific precipitate their waters in this belt, producing an annual rainfall averaging between 80 and 130 inches. Three-fourths of the precipitation occurs in the winter months, from November to March, inclusive, and is characterized by long, incessant rains and drizzle. Sitka, located on the outer shore of the archipelago and exposed to the full influence of the Pacific, has an annual rainfall of 88 inches. In general, this province has cool summers and comparatively warm winters; but it is essentially a region of cloudy and rainy weather, having on an average not more than one hundred clear days in the year, and these largely in the spring months. April to July includes the driest months, while the greatest precipitation is in the autumn. Foggy weather is also a characteristic of this coast and adds to the dangers of navigation. The snowfall is insignificant, many years showing none.

The temperature throughout southeastern Alaska is remarkably equable. The extremes recorded at Sitka show for August, the hottest month, an extreme range of from 35° to 87° F., and for the coldest month, February, a range of from 3° to 54° F. The mean temperature for January is 33°, and for August 56°, a range of only 23°.

Juneau, on the mainland, is less subject to the oceanic influence. In recent years the precipitation here has not been so great as at Sitka, and the mean annual temperature is several degrees lower, the difference being more marked in winter than in summer. The snowfall at Juneau at tide water is very small, but is heavy in the mountains near at hand.

In the southernmost part of this coastal zone the climate is warmer and even more humid than at Sitka. Records kept at Fort Tongass, located on Dixon Entrance and subject to the full influence of the ocean, show an average of 133 inches of rainfall and a mean annual temperature of about 48°. These records, however, embrace observations covering a period of only two years.

Sitka has a mean annual temperature only 2° colder than that of Port Angeles on Puget Sound, or of Scotland in the British Islands. Its rainfall, however, is about three times that of Puget Sound and twice that of Scotland (see pp. 162–165). Its average temperature is 2° warmer than the annual mean of Ottawa, Canada, and the climate does not show anything like the extremes of winter and summer, though its rainfall is nearly three times as great. It has a far more equable climate and a lower mean annual temperature than the populous cities of Winnipeg, Canada; Christiania, Norway; and Helsingfors, Finland.

The enormous precipitation along the coast has a great effect on vegetation. The seaboard of southeastern Alaska is densely timbered with forests chiefly made up of spruce and hemlock, with some red and yellow cedar and other species. Shrubbery and all other plant life grows rank. The dense foliage of the trees and shrubbery shields the ground from the sun's rays on the comparatively few clear

[a] Written in cooperation by A. H. Brooks and C. Abbe, jr.

days, and the moisture of the heavy rainfall is long preserved in the moss-covered, sponge-like soil. This dense growth of trees and shrubs is in strong contrast to the open forests of the interior and the treeless region of the barren grounds to the north.

There are few climatic records for the seaboard between Cross Sound and Cook Inlet. The outer coast line has probably a somewhat colder mean annual temperature than Sitka, with somewhat less rainfall. According to the reports from the Copper River, the spring and early summer months are usually bright and clear, and midsummer is sometimes quite hot. The fall months are rainy as a rule, while the winter is probably much more severe than in the southeast. July and August are probably rather free from frosts along the coast. In the Copper River Plateau region frosts are liable to occur at any time in the year, but are rare in June, July, and early August. The annual snowfall, which begins in October and November, averages from 2 to 4 feet, somewhat more than in the Yukon basin.

The inland fiords are decidedly colder than the outer coast line. Some incomplete observations at Valdez show that the winter months are on the average 10° and the summer months about 5° colder than the corresponding periods at Sitka, and the annual precipitation is probably 50 per cent less. Snow, said to amount to 7 or 8 feet annually, is reported to fall from November to May, when it gives place to the rain and fog which extend through early June. June and July are the clearest months in the year, while the fall is again rainy and foggy.

At Kodiak Island, which is in about the same latitude as Sitka and is fully exposed to the equalizing influences of the Pacific, the mean annual temperature is 4° lower than at Sitka and there is 20 per cent less rainfall. The Cook Inlet region, including the lower part of the Sushitna basin, though somewhat colder than that part of the seaboard which lies directly on the open ocean, has probably the most delightful climate of any portion of Alaska. While the winters are cold compared with southeastern Alaska, the upper part of the inlet being usually locked in ice from November to May, they are not so severe as those of Bering Sea. The charm of the Cook Inlet climate is its bright, clear weather in the spring and summer, when there is just enough rainfall to insure ample water for the growth of vegetation.

The shores of Cook Inlet and the lower slopes of the adjacent mountains are timbered with spruce, birch, cottonwood, willow, and alder, which latter grows in dense thickets along the water courses. The eastern side of Kodiak Island is sparsely forested, but the Alaska Peninsula and the Aleutian Islands are treeless, except for some stunted willows.

The Aleutian Islands, bathed on one side by the warm waters of the Pacific and on the other by the colder waters of Bering Sea, and far from the continental land mass, have a climate distinctly oceanic in character. The records show it to be colder than that of southeastern Alaska, with 5 to 10 per cent less rainfall. Precipitation at Unalaska, in the eastern part of the archipelago, is greater during the fall and winter months. The reported preponderance of clear days in January and February is not borne out by recent records in this region. The table on page 168 shows twenty-four rainy days in these months, against thirteen in May and June. Northerly and northwesterly winds prevail in the winter and southerly

and southwesterly during the summer. The mean temperature for the winter months is but little colder than for the corresponding periods at Sitka, but the annual mean is lowered by the cooler summers. The extreme range is 73° at Unalaska, 90° at Sitka, and 102° at Skagway. The fogs which are ever hanging about these islands make the passage of the straits perilous to navigation. Though timber is absent, grass grows luxuriantly.

Bering Sea is a cold body of water, with a mean annual temperature of about 39° F. It is practically closed against the warm influence of the Pacific by the barrier of the Aleutian Islands, and its cold temperature, incident to the high latitude, is probably increased by some influx of cold waters of the Arctic Ocean through Bering Strait. Fogs are very prevalent throughout the open season and seriously hamper navigation. The winter ice extends from Bering Sea as far south as the mouth of the Kuskokwim, and usually blocks navigation from about November until the end of May (see pp. 174–176).

The climate of the eastern shore of Bering Sea is rigorous in winter, growing more so toward the north, but its summer temperature is only a few degrees cooler than at Sitka. St. Michael, near the mouth of the Yukon, has a mean annual temperature of about 26°, but a summer extreme of 77° and a winter extreme of −55° are on record, giving an extreme range of 132°. Sitka has but 90° range. The annual precipitation at St. Michael is only about 18 inches, and much of that falls in the form of rain from May to October.

In the Seward Peninsula, which forms the north shore of Bering Sea, June, July, and August can be counted the summer months. The snow has usually disappeared by the 1st of June and does not begin to fall again until September. In some years June and July are delightfully dry and pleasant months, but the colder rains, which are apt to begin in August and practically continue until snow flies, often accompanied by severe winds, are excessively trying. During 1901 the average temperature was 44° in July and August and 40° in September,[a] the number of rainy days during these months aggregating thirty-six. At Port Clarence two years' records[b] showed a mean annual temperature of 22°, with a minimum of −38° and a maximum of 77°. The precipitation of the only year in which a record was kept amounted to 5.58 inches. The ground is usually found to be frozen a foot or two below the surface throughout the year.

The climate of the Seward Peninsula during the late summer and early fall is probably the worst of any part of Alaska which is inhabited by white men, for at this season of the year it is essentially arctic in its character and similar to that of the Arctic province. The utter lack of timber makes it impossible for the traveler to find shelter and often hardly fuel. While the winter temperatures of the northern Bering Sea coast lines are usually not so low as those of the interior, the greater humidity of the atmosphere makes them harder to resist.

The Arctic province, which includes the seaboard of the polar sea, is similar in character to the northern part of Bering Sea, but colder. At Point Barrow, the northernmost cape of Alaska, the mean annual temperature is less than 8°, with a precipitation less than 8 inches. The extreme of summer heat recorded

[a] Prof. Paper U. S. Geol. Survey No. 2, p. 7.

[b] Reconnaissance of the Cape Nome and Adjacent Gold Fields of the Seward Peninsula, 1900, p. 163.

at this point is 65°, in July, and of cold −55°, in February, giving an extreme range of 120°. The summer extends from about the middle of June to the middle of August, when snow begins to fly. Shore ice begins to form along the north Arctic coast early in September and remains until July. The Arctic pack ice has been known to come in on shore as early as August 14, but on that occasion went off again on the 28th of the same month (1902). Inland the summer months are usually clear, but the sea is often mantled in fog. The arctic littoral of Alaska is part of the broad tundra or barren ground belt which encircles the polar sea. The surface is everywhere covered with a dense growth of moss and grass and abundant wild flowers, beneath which the ground is perpetually frozen. Along the watercourses willows are found in thick growths, clinging close to the ground to avoid the icy blasts of the arctic winds. Away from the watercourses there is no timber of economic value, though some stunted shrubbery is found. It is remarkable that the observed total precipitation in the Arctic province averages about one-half that of the dry interior, and is comparable with the conditions prevalent in northern Nevada.

The climate of the Alaskan interior is continental in its character, semiarid, with great extremes of heat and cold. On ascending the Yukon, one gradually passes out of a relatively humid coastal belt, and at the international boundary reaches a point where the annual rainfall, as far as recorded, is less than 10 inches. Here the average temperature for December to February is from 5° to 10°, with an extreme minimum of −76° to −80°, while in the summer months of June, July, and August, 50° to 60° is the mean; the maximum, 90°. Frosts may occur at any time during the year, though there is usually a period of about 30 days, from the middle of June to the middle of July, which is without frost. The heaviest precipitation is in July, August, and September, and is always moderate in amount, while the winter snowfall aggregates from 2 to 3 feet. At other points in the Yukon basin less reliable records place the snowfall at from 4 to 6 feet. The Yukon usually begins to break in May, by which time the winter accumulation of snow has disappeared from the lowlands. It freezes again in early November, but after the middle of September the ice begins to run and navigation is interrupted. In spite of the rigorous cold of winter, the climate is less trying to man than some less severe though humid regions. Even during the extremes of cold, traveling with dog teams is not impossible, unless the wind is blowing. The lowlands of the interior are usually well forested with spruce, cottonwood, birch, willow, and alder. Away from the rivers and streams the forest becomes more open, and ceases altogether 2,000 or 3,000 feet above sea level. The region nearly everywhere is covered with a coating of thick moss, except in the open lowland tracts, where grass takes its place, and a few inches below the surface soil the ground in many places remains frozen throughout the year.

In this connection it is interesting to note that there is only one instance on record where excavation in this northwestern region has gone below the zone of perpetual frost. Tyrrell[a] describes a shaft in the Klondike placer field which pierced the frozen ground to a depth of about 200 feet. In the Nome region a

[a] Tyrrell, J. B., A peculiar artesian well in the Klondike: Eng. Min. Jour., vol. 75, 1903, p. 188.

shaft 120 feet deep did not reach below the level of perpetual frost. It must not be supposed that there is a continuous incrustal of frozen soil, for the placer-mining excavations in many places fail to reveal any.

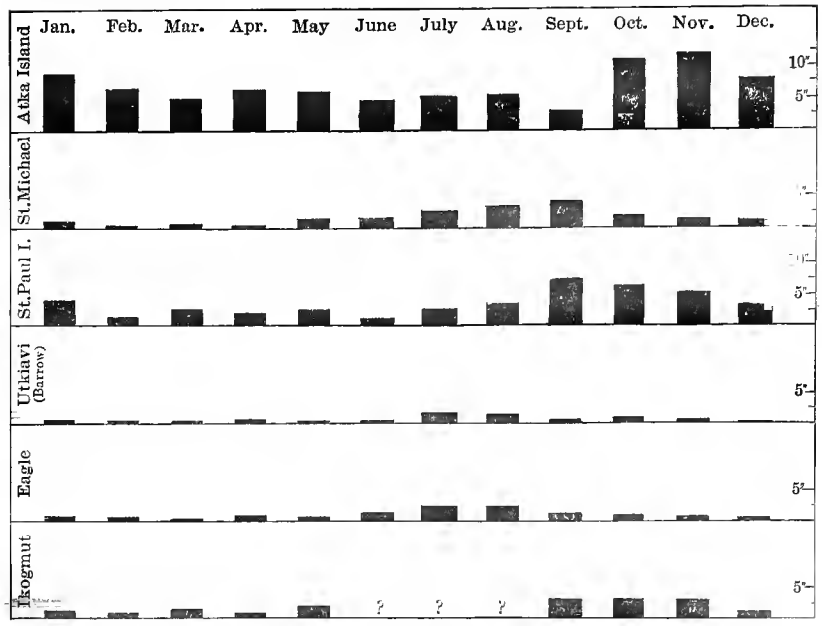
CLIMATIC FEATURES, BY PROVINCES.

PACIFIC COAST CLIMATIC PROVINCE.

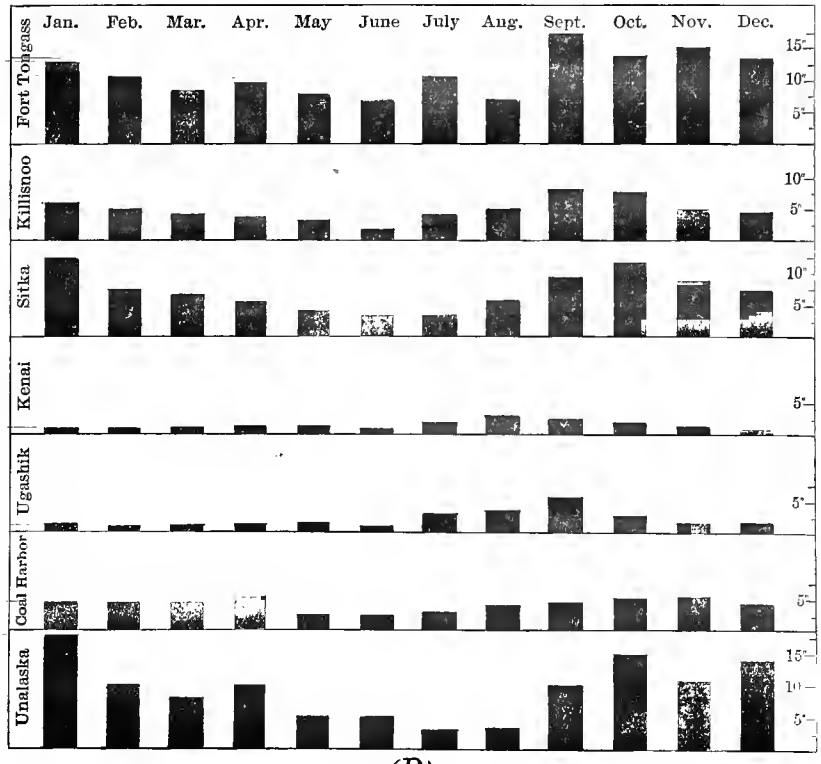
Rainfall.—The Pacific coast province, and more particularly the "panhandle," is well known for its heavy rainfall and cloudy weather. The tables on pages 162 et seq. and Pl. XIX show that this portion of Alaska, as well as the northwest coast of the States, has a rainfall comparable only to that of the Aleutian Islands, the immediately adjacent coastal portions of British America, and the coast of Washington and Oregon. In general, however, the precipitation within Alaska falls somewhat short of that recorded in the latter district. The heaviest annual rainfalls in this province occur at Nuchek (190.09 inches), Fort Tongass (133.10 inches), Orca (129.30 inches), Juneau (84 to 93 inches), Sitka (88.1 inches), and Fort Liscum (81.3 inches). Fort Wrangell, Killisnoo, and Kodiak stand next, with 50 inches or more, while Tyonok, Skagway, and Kenai have only between 15 and 25 inches.

Nearly all this precipitation falls as rain, and for the most part from September to January, both inclusive (Pl. XIX). During the other months a considerably smaller proportion of the annual rainfall is precipitated. The season of least rainfall, and consequently the one having the fewest number of rainy days, is generally from April to July. The table of annual and monthly rainfall (p. 162) shows Nuchek to be the only exception to this rule. At that station the heavy rains last until May and begin again in August. The table of rainy days (p. 168) shows that during the months of heavy rains there is scarcely a day without precipitation, the number of rainy days in a month running up to twenty, twenty-two, twenty-seven, and, in the case of Fort Liscum, even to twenty-eight and a half. On the other hand, the same table shows that even in the less rainy months the number of days per month on which rain falls is usually not less than ten, except at Skagway, Kenai, Fort Liscum, and Tyonok, where it is five or even less.

A feature of the local rainfalls which is often of economic importance is the maximum rainfall during a limited period of time—e. g., in twenty-four hours. If the material at hand were more complete and time allowed, a table of average maximum rainfalls would prove very valuable. In the absence of such a table the observed maximum rainfall in twenty-four hours for as many stations as possible have been collected in the table on page 166. From this table some idea of the intensity of the rainfall may be obtained. The table shows that the eastern portion of the Pacific coast province is subject to the most severe downpours, as a rule, the maximum amount of rain in twenty-four hours in that region being from 3 to 7 inches. The western stations have downpours generally less than 2 inches. Orca, however, has a record of over 7 inches of rain in twenty-four hours, which is the heaviest reported from any Alaskan station, and



(A)



(B)

TYPICAL MONTHLY RAINFALLS.

yet is more than 3 inches less than the heaviest daily rainfalls which have been recorded in the United States.

Generally the excessive rainfalls occurred during the characteristically rainy months, viz, in the fall and winter. Nuchek and Kodiak, however, again show variations from the general rule, as they have very heavy rains during May while Juneau has its heaviest rains in July and August.

Temperature.—The Pacific coast province, as shown by the table on pages 158–161, holds an intermediate position among the climatic provinces of Alaska so far as temperature is concerned. The extreme ranges observed in the province cover about 95° F., most of the stations showing a slightly smaller extreme range. Of course the average annual range is considerably less. An extreme maximum higher than 95° has not yet been recorded in the province, the highest being 92° at Skagway. On the other hand, every station except Nuchek and Orca has recorded a minimum temperature falling between −3° and −43° F. It is interesting to notice that the highest maxima and the highest minima occur in the "panhandle," while the lowest absolute maxima and minima occur on Kodiak Island and along Kenai Peninsula.

The greatest absolute ranges in temperature, 110° and 125°, occur in the Cook Inlet region, and are due to the fact that the minimum temperatures fall much lower than those in the eastern part. The most equable temperatures of the province seem to prevail at Nuchek and Orca, which lie between the waters of Prince William Sound and the Gulf of Alaska. Here the maximum has remained below 90° and the minimum above 0° F., resulting in an absolute extreme range of 60° for Nuchek and of 84° for Orca.

Growing season.—The dates of the last frosts in the spring and the first frosts in the autumn with the number of intervening days free from frost are given in the table on page 171, in as much detail as the records permit. From this table it appears that among the inlets and islands of the southern panhandle district the last frost comes during the latter half of April and the first fall frost the end of September or beginning of October. Thus there results a growing season in this region of about two hundred days. Farther north, from Sitka to Skagway, the last spring frost comes about the first of May and the first frost in the fall toward the middle of September, thus reducing the growing season to about one hundred and seventy-five days. In the Cook Inlet region the season becomes still shorter, as the last frost delays until May or even June while the fall frosts hurry in by the first week of September.

River and harbor ice.—The records of opening and closing of streams and harbors by the ice are very scanty among the meteorological records examined. They are given in the table on page 174. From the few found it would seem that the sea is free from ice by the middle of March at Unga Island, but that Cook Inlet does not usually open before the end of that month. Ice begins to form there late in the fall, perhaps the middle or last week in November. Within the Alexander Archipelago, however, the ice has been known to form as early as the end of October, and the bay at Fort Tongass has been closed during the first week in November.

ALASKA PENINSULA CLIMATIC PROVINCE.

Rainfall.—The province embracing the Alaska Peninsula and the islands to the south is characterized by less extremes of climate than the other portions of Alaska. The rainfall records from this province are not very complete, but they serve to show that the precipitation is much less than in the Pacific coast or Aleutian Islands province (see also Pl. XIX). Ugashik, on the west coast, has an annual rainfall of only 24.41 inches, while Unga Island, off the east coast, receives just about twice as much, 48.78 inches. The records at Morzhovoi, although not complete, indicate that the precipitation increases decidedly to the southwest toward Unalaska Island.

The seasonal distribution of rain is in general similar to that prevailing on the Pacific coast and among the Aleutian Islands. There is a rainier season from September to January and a drier one from February to August. The contrast between these two seasons is much less marked in this province, however, than it was seen to be in the Pacific coast province. This is shown by the larger number of rainy days in the year, and is also apparent from a brief examination of the table of monthly rainfalls (p. 162). This table shows that Coal Harbor has averaged from sixteen to seventeen rainy days in every month; Ugashik, on the west coast, ranges between fifteen and twenty-six rainy days, while the stations of the Pacific coast province have ranges running from nine or ten rainy days in the summer months up to twenty-six or twenty-eight days in the fall and winter.

The heaviest twenty-four-hour rainfalls of the province show interesting variations. Coal Harbor has the heaviest downpours, 1.25 to 5 inches, which are in excess of those occurring at most of the other stations in Alaska. Morzhovoi comes next with falls of from 0.40 to 2.07 inches. It is a peculiarity of these showers, however, that they seem to occur in any month except December, while at Coal Harbor the heaviest rains in twenty-four hours occur during the months from April to July. On the west coast Ugashik records seem to indicate that this portion of the province is rather exempt from such heavy rains. The recorded maximums lie between 0.22 and 1.20 inches. The season of heaviest rains in any twenty-four hours is from June to November.

Temperature.—As regards temperature ranges the Alaska Peninsula and the Pacific coast rank together between the two extremes found in Alaska. The extreme annual range is not so great as that of the interior nor so limited as that of the more isolated islands. The two stations on the east coast of the peninsula show an extreme annual range of 80° or 90°, practically the same as that prevailing about Dixon Entrance, but on the west coast the maximum range has extended through 124°. This contrast arises chiefly from the fact that much lower minimum temperatures are experienced on the west coast than on the east, and is not due to any important difference between the maximum temperatures of the two coasts. This contrast may be traced throughout the year. Each month the minimum at Ugashik falls lower than at Coal Harbor or Morzhovoi, while the maximum temperatures, reached during July and August on both coasts, almost coincide.

Growing season.—The dates of first and last frosts in this province (p. 171) show that on Unga Island the growing season includes about one hundred and fifty days,

and lasts from the middle of May to the last week in September. The records from Ugashik are too scanty to permit any such estimate for that station, but judging from the records at Carmel Mission, on the delta of the Nushagak River, the number of days free from frost seems to be about one hundred and six, with a factor of uncertainty as to the occurrence of frosts in August.

River and harbor ice.—There are no records of the dates of opening and closing of streams and harbors.

ALEUTIAN ISLANDS CLIMATIC PROVINCE.

Rainfall.—The Aleutian Islands province ranks next to the Pacific coast province in amount of annual and monthly rainfall, but has a greater number of rainy days. Although complete records exist for Unalaska and Atka only, the other stations have sufficiently complete records to indicate that the average rainfall throughout the province will scarcely exceed 80 inches in a year. The greatest annual rainfall is at Unalaska, which also has the greatest number of rainy days. Indeed, this station has the greatest number of rainy days of any in Alaska, viz, 250.8, although heretofore Sitka has been considered as the rainiest point in the United States. Here, as on the Alaska Peninsula, the heaviest rainfall occurs during the fall and early winter, usually in October and November (see Pl. XIX). At Unalaska the season of heaviest monthly rains is somewhat longer than this, lasting from September until February, and the maximum occurs in January. The season of least rainfall at this station falls between June and August, yet even during this period the monthly rainfall averages very little under 3 inches. On the other islands of the province the season of minimum rainfall, so far as it may be determined from the insufficient records, occurs during the winter and early spring months. In general not less than 2 or 3 inches of rain fall in any month except February on Kiska Island, and the distribution of the rainfall throughout the year is unusually uniform. The same may be said of the distribution of rainy days as shown by the table on pages 168–170.

In amount of maximum daily rainfalls this province again stands next to the Pacific coast province. The seasonal variation of this factor is, however, less in the province under consideration, ranging from 5.58 inches at Unalaska to 1.75 inches at Unalaska and Atka. The maximum rainfalls in twenty-four hours observed on Kiska and Attu islands fall much below these figures. These heavy rains seem to characterize no one season on Unalaska, but to occur with equal frequency at any time between October and April. On the other islands they occur during July to January, but show some tendency to happen in the summer months as well.

Temperature.—The table on page 158 shows that the Aleutian Islands have characteristic island climate, so far as the ranges in temperature are concerned. The extremes are here closer together than anywhere else in Alaska. A maximum of 78° is the highest that has been recorded, and the lowest minimum was 5°, observed at Unalaska. On the other islands the lowest minimums are much higher, 15° and 11°. The warm season includes June, July, and August; the cold season is most severe during February and March.

Growing season.—Atka Island probably has the longest growing season, from the middle of February to the end of October, although this seems impossible. The

partial record from Attu Island indicates that during that year the frost-free season lasted from early in May until the end of September, a period of about one hundred and thirty-five days. There is no evident reason why the growing season throughout the province should not be of about the same length as that just given for Attu Island.

River and harbor ice.—The records of frosts and of harbor ice are very incomplete.

BERING SEA COAST AND ISLANDS CLIMATIC PROVINCES.

Rainfall.—The precipitation in the Bering Sea coast and islands provinces is probably less than in the provinces to the southeast. The annual rainfall is heaviest about Fort Alexander, where it averages 33 inches, and it decreases in amount northward to an average of 18 inches at St. Michael. The precipitation of this province is thus shown to be comparable to that in the portion of the United States stretching from North Dakota and Minnesota on the north to Texas on the south. This moderate rainfall occurs within the relatively small number of one hundred and twenty-five to one hundred and sixty days.

The seasonal distribution of the rainfall (see Pl. XIX) seems to be quite different from that which prevails over the southern portions of Alaska, since the greatest amount of rain falls from July to October. Fort Alexander shows a distinct season of maximum rainfall limited to July, August, and September, and a very uniform monthly amount of from 4 to 5 inches during those three months. Farther north, at St. Michael, the average monthly precipitation increases regularly from 1.27 inches in June to 4.02 inches in September, and then takes a sudden drop to 1.70 inches in October. On St. Paul Island, however, the brief records show a much greater maximum, which occurs during the months of September, October, and November. This island has as many rainy days as Sitka—two hundred and seven—and one-half the precipitation—40.68 inches—from which it may be seen that the Bering Sea islands have a relatively drier climate than the coast. The table of rainy days (p. 168) brings out this difference even more strikingly, perhaps. It shows that, month for month during the rainy season, the islands have twice as many days with 0.01 inch or more of rain than does the coast. Strangely enough, however, these conditions are reversed during the months of June and July, as then the coast stations have twice as many rainy days as the islands.

In excessive rainfall in twenty-four hours this province (see p. 166) ranks next after the Aleutian Islands. On the coastal portion the heaviest daily rainfall occurs during the midsummer months, and ranges between 2 and 2.75 inches. On the island of St. Paul it seems to occur during the winter months, while during the summer this section receives the lightest of its maximum daily precipitation. As is apparent from the maxima just given, none of these twenty-four-hour quantities are very heavy, and the smallest which have occurred along the coast are very small indeed, even when compared with the scanty rainfalls of the interior province. The records containing these minima are from Omalik and are very incomplete—probably too faulty to warrant any conclusions at all to be drawn from them.

Temperature.—The extreme annual range in temperature of the Bering Sea coast province stands between that of the Pacific coast province and that of the interior. Although the maximum temperatures exceed those of the Aleutian Islands very little, the long winter, during which the sea is here covered with ice, suffers a fall in temperature which brings the minima far below those of the former province. The winter of the Bering Sea islands is also distinguished by these low temperatures. The reported extreme minima from the mainland range between −30° at Fort Alexander to −70° at Carmel Mission, and average about −52°. On the islands the lowest temperatures observed have been −10° on St. Paul and −31° on St. Lawrence. The extreme cold weather occurs during February and March, but the short record at St. Paul Island shows that its lowest temperature came in April. The greatest daily range in temperature lasts from September to March, thus including the periods of greatest cold. The season of least daily ranges lasts from May to October, with a warm season during June, July, and August.

Frosts.—The last frosts occur about the end of May and the fall frosts come toward the middle of September; thus the growing season for plant life is scarcely one hundred days in length.

Sea ice.—The sea in the vicinity of St. Lawrence Island is covered by ice from the first week in November until the end of April. The harbors along the coast do not open as early—at Carmel Mission clear water not appearing before the first week in May and at St. Michael Harbor usually not before the end of the first week in June.

ARCTIC COAST CLIMATIC PROVINCE.

Rainfall.—The precipitation along the Arctic coast of Alaska is probably the smallest in amount of any recorded there, averaging between 6 and 7.50 inches in a year. Most of the scanty winter precipitation is in the form of rather fine-grained snow, which drifts very badly under the influence of the storm winds of the season and is therefore very hard to measure accurately. On account of this low amount of moisture the climate may be classed as arid. It is comparable to that of the upper San Joaquin Valley in California and the Nevada-Utah deserts. The number of days with a measurable amount of rain is, of course, also the lowest for Alaska.

The greater portion of the scanty annual rainfall comes between July and December, the months from July to October generally having the greatest monthly totals (Pl. XIX). Another peculiarity about the rainfall here is the relatively great contrast between the small amount in December, January, and February and that which comes during July, August, and September. The former have monthly totals of 0.03, 0.05, and 0.19 inch; the latter have totals of 1.34, 1.02, and 1.48 inches, respectively. A study of the table on page 166 shows that most of the fall of any month may occur in one or two days only, leaving all the rest of the month without a measurable quantity to its credit. Indeed, cases are on record where the whole month's rain fell in less than one day. On the other hand, it has happened at Point Barrow that January, April, and May have passed without any rain or snow falling. The dry-

ness of this province is still further shown by the table on page 168, from which it appears that the average number of rainy days per month is thirteen or lower. In no other province except the interior does the average number of rainy days fall below fifteen except during the dry season. Here in the rainy season the highest number of rainy days on record is eighteen, reached once. Four times the maximum number reached fifteen, while the minimum has been 0 four times and 0, 1, or 2 fourteen times.

Temperature.—The extreme annual range of temperature in the province (p. 158) is very nearly the same as that of the Bering Sea coast, but the extreme is here subject to much greater fluctuations. Except at Kikiktak, whose maximum temperature is 81°, the summer temperature shows distinctly the influence of the cold waters bounding this province on the north. The highest temperatures recorded at Point Hope or Barrow do not exceed 65°, a maximum which is also found on Bering Island. The maxima occur only during July and August. On the other hand, the minimum temperatures, while low, are not as severe as in the mountains to the south. The extreme low temperatures of the province have probably not gone lower than −55°, a temperature which has been equalled or exceeded at nearly every one of the interior stations. Evidently even the icebound Arctic Ocean exerts a moderating influence upon the winter temperatures of its coast. For the same reason the range in temperature is no greater at these higher latitudes than it is reported to be along the Bering Sea coast. While considering these minimum temperatures it is interesting to find that only in June, July, August, and September has the minimum temperature failed to fall below 0° F., while August at Point Hope is the only month in which the temperature has not fallen below 32° F. From these records it is clear why every month in the year seems to be subject to frost in this province.

The minimum temperatures and the greatest daily ranges of temperature occur during January, February, and March. The daily range decreases until the end of May, when it suddenly drops to its minimum, which it holds during June, July, and August. The season of minimum daily range at Barrow, however, seems to come from July to September, one month later than at the two stations on the more western coast of the province.

Frosts.—Unfortunately the growing season has not yet been carefully recorded in this region. Probably it does not begin before the end of June and ends on or before the middle of September. In 1902 a killing frost occurred at Barrow at the end of August, and if this happens every year or two the growing season there is likely to prove too short for human needs in spite of twenty-four hours of sunlight during the summer months.

INTERIOR CLIMATIC PROVINCE.

Temperature.—The geographic position of the interior province leads one to expect here the greatest extreme annual ranges of temperature and the greatest mean annual ranges. Indeed the extreme ranges here are from 120° to 162° F., and generally they are not less than 133°. The extreme monthly ranges naturally

cover a smaller interval; the greatest of them were 112° and 110° in January, February, and March at Eagle and Tanana, respectively. It is probable that even at these stations such monthly ranges are rarely attained in any one year. The smallest extreme monthly ranges may be expected during June, July, and August, and even these greatly exceed the ranges which characterize these months in the other provinces of Alaska.

A brief examination of the table of temperatures of the interior province (p. 158) shows that extremely high temperatures are not characteristic. The maximum temperature recorded by properly sheltered instruments has not risen above 90° in the great Yukon basin, and the temperature of 94° at Copper Center, on the Copper River Plateau, is the highest that has been reported from any of the voluntary observing stations of the United States Weather Bureau. The writer is not unmindful that Dr. W. H. Dall makes the following statement:

"At Fort Yukon I have seen the thermometer at noon, not in the direct rays of the sun, stand at 112°, and I was informed by the commander of the post that several spirit thermometers, graduated up to 120°, had burst under the scorching sun of the Arctic midsummer."[a]

This passage leads one to infer that the temperature at Fort Yukon has been known to reach 120° F., but the writer doubts if such an inference is justified by our knowledge of the facts concerning the exposure of the thermometers which are reported to have burst under the heat. Since the Weather Bureau has been sending standard instrument shelters into the Alaska interior and has been receiving records from registering instruments exposed in them, no such temperature for the air as 112° has ever been reported. That it grows very hot in this province no one may deny. Doctor Dall, in the same book (loc. cit.), has characterized the summer heat thus:

"In midsummer on the upper Yukon the only relief from the intense heat, under which the vegetation attains an almost tropical luxuriance, is the brief space during which the sun hovers over the northern horizon, and the voyageur in his canoe blesses the transient coolness of the midnight air."

The air temperatures of the interior have sometimes been closely approximated by maximums in the Pacific coast province, but it is not probable that they are often even approached there, and surely the days as a whole must be much more bearable.

The minimum temperatures in this province fall much below those usually met with in any other portion of Alaska. The lowest recorded is −80° at Fort Reliance in January and the highest absolute minimum for any station is −49°, which was observed at Camp Davidson and Camp Colonna, on the international boundary. With the exception of these two stations the extreme minima decrease rather regularly as the Bering Sea coast is approached. The table shows that the great range in temperature which is experienced in the interior is due to the very low winter temperatures rather than to very extreme summer ones.

Growing season.—The growing season in the interior seems rather short in number of days, but when one remembers the length of time that the sun remains

[a] Dall, W. H., Alaska and its Resources, Boston, 1870, p. 437.

above the horizon and the consequent increase in the number of hours of insolation, the luxuriant and rapid growth of vegetation already referred to seems not so remarkable. The records at Camp Colonna show that the growing season during 1889–90 lasted from the end of April to the middle of October, making about one hundred and fifty days free from dangerous frosts. At Camp Davidson the record is more accurate and shows a much shorter season. Here the last killing frost occurred between the 3d and 27th of June, and the first killing frost came on August 13. At Eagle the records from 1883 to 1885 show that the last spring frost comes about May 15 and the first fall frost about the end of August, thus allowing a maximum growing period of perhaps one hundred and ten days. Fort Reliance has had frosts occur as early as the middle of August, with killing frosts before the end of September. Fort Yukon reports killing frosts by the first of September, and Holy Cross Mission, in the western interior, shows the average date of the last spring frosts to be the middle of May, and the first frost in the fall to happen by the end of August, or even earlier, so that the growing season there seems to last scarcely ninety days. In general, it may be concluded that the period of growth for the more tender vegetation of the interior province rarely exceeds fifty days in the eastern part, but increases in length up to perhaps one hundred and twenty days as the western coast is approached, lasting from the middle of June to the middle of August.

Rainfall.—The generally scanty rainfall of the interior is outclassed only by that of the Arctic coast. The most complete records of this element come from Eagle, where an average rainfall of 11.35 inches for the year has been observed. The fragmentary records from other interior stations indicate that Eagle probably has the smallest rainfall of the interior with the exception of Fort Reliance. As a whole, it is clear that the rainfall is least in the extreme eastern portion of the province and increases westward up to a maximum of probably not much over 25 inches in the year. This range in precipitation is also characteristic of that portion of the United States which lies between the Sierra Nevada and the Rocky Mountains north of the latitude of Salt Lake City. Similar conditions also prevail over northern Europe and north-central Asia, as well as most of Canada lying north of the Great Lakes.

The intensity of the rains in this province is much less than that found in the Pacific coast province, as is brought out in the low maximum rainfalls for any twenty-four hours. These rains rarely attain as high an amount as 2 inches, and most of the stations, particularly in the eastern and central portions, show only half of this amount or less. The variation in the maximum amount of rain observed in one day is considerable, ranging from 4.1 inches at Kolmakof down to 0.07 inch at Fort Reliance. This shows that these maximum falls in a day, like the average annual and monthly precipitation, decrease as distance from the coast increases.

The season of heaviest monthly rainfall lasts from June through August over the eastern portion of the province, and from August to November in the central and western areas. The largest number of rainy days occur during August and September, the average rising to sixteen or eighteen. The rain which falls during these

months comes in the form of heavy showers and rarely stretches itself over more than twenty-four hours. The months of February and May show the lowest number of rainy days, the averages being from six to eight, and the season with the smallest maximum twenty-four hour rains seems to be from October to June. The incomplete character of the summer records in this province prevents any accurate study of the summer conditions, and the above summary may need very decided revision when better records shall be obtained.

River ice.—The opening and closing of the streams of the interior is best presented in the tabular statement on pages 174–176.

GENERAL CLIMATOLOGIC TABLES.

The following tables present in a compact form some of the results of observations on temperature, frost, rain and snowfall, and the movements of river and harbor ice at forty-six stations in Alaska. In these tables the stations have been grouped by geographic provinces, so that the observations relating to each province may all be under the eye at one time. The geographic coordinates of each station, the organization or organizations under which the observations were made, and other general information are given in the table on page 138, where the stations are arranged in alphabetical order.

Extreme temperatures and

No.	Stations.	January.			February.			March.			April.		
		Max.	Min.	R.	Max.	Min.	R.	Max.	Min.	R.	Max.	Min.	R.
	Pacific coast.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.
1	Fort Tongass	47*	6*	41	45*	23*	22	59*	− 2*	61	60*	33*	27
2	Fort Wrangell	47*	− 4*	51	58*	2*	56	54*	*−10**	64	64*	24*	40
3	Killisnoo	52	− 2	54	50	*−10*	60	52	− 2	54	63	15	48
4	Juneau (1)	50	− *4*	54	50	− *4*	54	50	10	40	63	13	50
5	Juneau (2) (wharf)	44	4	40	50	4	46	61	− *5*	66	61	28	33
6	Skagway	42	− 4	46	44	− 9	53	63	*−10?*	73	61	16	45
7	Sitka	51*	− *2**	53	54*	− 3	57	65	− 1	66	70*	19*	51
8	Nuchek (Fort Constantine)	48	20	28	47	16	31	45	27	18	54	27	27
9	Orca	43	5	38	46	8	38	57	*2*	55	64	25	39
10	Fort Liscum	45	*−14*	59	42	−12	54	52	− 8	60	52	2	50
11	Kenai	45	−40	85	45	−32	77	52	−34	86	58	4	54
12	Tyonok	38	*−27*	65	49	−17	66	58	− 9	67	59	1	58
13	Kodiak (1)	51	− 1	52	52	*−10**	62	64	11	53	61	20*	41
14	Kodiak (2) (Woody Island)	49	− 5	54	58	4	54	55	5	50	59	9	50
	Alaska Peninsula.												
15	Ugashik	46	−27	73	51	*−38*	89	55	−36	91	59	11	48
16	Mine Harbor (Herendeen Bay)	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
17	Coal Harbor (Unga Island)	47	− 9	56	51	*−12*	63	53	−11	64	65*	4	61
18	Morzhovoi	47	12	35	45	6	39	45	− *3*	48	49	14	35
	Aleutian and Commander islands.												
19	Unalaska	52	16	36	51	9	60	51	*5*	46	59	18	41
20	Atka Island	45	20	25	46	*12*	34	46	21	15	50	21	29
21	Kiska Island	35	17	18	44	*15*	29	43	18	25	50	21	29
22	Attu Island	42	17	25	41	17	24	41	*11*	30	52	26	26
23	Bering Island	37	3	34	43	3	40	39	1	38	40	1	39
	Bering Sea coast.												
24	Fort Alexander	40	−27	67	39	*−30*	69	46	−15	61	48	8	40
25	Carmel Mission (Nushagak)	42	−41	83	.....	.....	....	62	*−70*	132	47	−15	62
26	Bethel Mission	41	−39	80	35	−29	64	.....	.....	....	.....	.....	....
27	St. Michael	44	−47	91	40	*−55*	95	44	−39	83	46	−26	72
28	Omalik (mine)	43?	−33	76	36	*−52*	88	43	−36	79	55	−24	79
	Bering Sea islands.												
29	Gambell (St. Lawrence Island)	32†	−27	59	35*	*−31*	66	35	*−31*	66	42*	−18	60
30	St. Paul Island	40*	13	27	39	− 1	40	43*	− 9	52	49*	*−10*	59
	Arctic coast.												
31	Kikiktak (Friends' Mission)	44	*<−50?*	94	34	−45	79	40	−36	76	40	−27	67
32	Point Hope (mission at Tikira)	23	−34*	57	6*	*−41*	47	38*	−39	77	35	−32	67
33	Utkiavi (Cape Smyth)	20	−49	69	24	−53	77	26	−51	77	32	−35	67
	Interior stations.												
34	Fort Reliance	20	*−80*	100	27	−72	99	45	−36	81	59	−10	69
35	Camp Davidson	25	*−49*	74	21	−39	60	30	−30	60	46	− 5	51
36	Eagle (Fort Egbert)	23	*−75*	98	38	−74	112	56	−56	112	59	−12	71
37	Circle	28	*−55*	83	28	*−55*	83	38	*−55*	93	48	−22	70
38	Camp Colonna	19	*−49*	68	35	−47	82	33	−48	81	51	−28	79
39	Rampart	19	*−68*	87	42	−48	90	.....	.....	....	.....	.....	....
40	Tanana (1) (Fort Adams)	34	*−76*	110	38	−60	98	46	−38	84	53	−14	67
41	Tanana (2) (Fort Gibbon)	.....	−63	....	.....	−11	....	.....	−43	....	.....	−15	....
42	Nulato (St. Peter Mission)	23	*−62*	85	29	−60	89	44	−33	77	50	−23	73
43	Anvik	35	−39	74	37	*−53*	90	46	−43	89	46	−25	71
44	Holy Cross (mission)	41	−55	96	41	*−57*	98	47	−55	102	50	−31	81
45	Ikogmut	39?	−48	87	36	−49	85	49	−35	84	53	−16	69
46	Kolmakof	43	*−58*	101	42	−44	86	44	−36?	80	49	−12	61
	Copper River Plateau.												
47	Copper Center	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....

NOTE.—Italic figures denote minimum observed for station; heavy faced, maximum observed.

ranges in Alaska Territory.

No.	Stations.	May.			June.			July.			August.		
		Max.	Min.	R.	Max.	Min.	R.	Max.	Min.	R.	Max.	Min.	R.
	Pacific coast.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.
1	Fort Tongass	70*	38*	32	76*	43*	32	91*	52*	39	81*	47*	34
2	Fort Wrangell	78*	35*	43	86*	38*	48	82*	44	38	84	43	41
3	Killisnoo	76	24	52	76	33	43	84	38	46	81	36	45
4	Juneau (1)	71	26	45	82	38?	44	88	38	50	82	38	44
5	Juneau (2) (wharf)	69	29	40?	80	36	44	86	40	46	71	39	32
6	Skagway	79	25	54	90	34	56	92	39	53	80	32	48
7	Sitka	80	28	52	80*	33	47	87*	35	52	82*	39	43
8	Nuchek (Fort Constantine)	58	30	28	70	39	31	69	47	22	70	46	24
9	Orca	64	28	36	77	35	42	86	33	53	78	40	38
10	Fort Liscum	62	25	37	79	32	47	77	32	45	70	30	40
11	Kenai	63	20	43	79	26	63	82	30	52	73	28	45
12	Tyonok	68	22	46	82	33	49	83?	38	45	73	31	42
13	Kodiak (1)	62	20*	40	76	34	42	82	40*	42	75	41	34
14	Kodiak (2) (Woody Island)	71	20	51	82	37	45	82	40	42	77	41	36
	Alaska Peninsula.												
15	Ugashik	63?	20?	43	83	29	54	78	31	47	86	32	54
16	Mine Harbor (Herendeen Bay)	.....	.....	....	.....	.....	....	.....	.....	....	62	42	20
17	Coal Harbor (Unga Island)	67*	12	55	71	15	56	79	37	42	75*	33	42
18	Morzhovoi	>51?	<25?	26?	.....	.....	....	78	37?	41?	68	42	26
	Aleutian and Commander islands.												
19	Unalaska	60	24	36	68	34	34	78	37	41	78	36	42
20	Atka Island	65	24	41	72	28	44	76	35	41	72	39	33
21	Kiska Island	60?	37?	13	70	35	35	67	38	29	54	38	26
22	Attu Island	.....	.....	....	.....	.....	....	.....	.....	....	66	38	28
23	Bering Island	56*	23	33	61*	31	30	63	36	27	63	37	26
	Bering Sea coast.												
24	Fort Alexander	67	7	60	78	32?	46	69	36	33	78	42	36
25	Carmel Mission (Nushagak)	65	23	42	81	35	46	78	38	40	.....	.....	....
26	Bethel Mission	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
27	St. Michael	56	− 3	59	66	22	44	77	33	44	69	32	37
28	Omalik (mine)	63	16	47	.....	.....	....	.....	.....	....	.....	.....	....
	Bering Sea islands.												
29	Gambell (St. Lawrence Island)	45	3	42	62	15	47	69	30	29	59	25	34
30	St. Paul Island	52*	19	33	63*	31	32	59	35	24	56	40	16
	Arctic coast.												
31	Kikiktak (Friends' Mission)	61	−15	76	72	27	45	81	32	49	67	26	41
32	Point Hope (mission at Tikira)	55*	−12	67	58*	21	37	56*	26	30	62*	36*	26
33	Utkiavi (Cape Smyth)	42	−14	56	61	18	43	65	27	38	59	26?	33?
	Interior stations.												
34	Fort Reliance	76	16	60	.....	.....	....	.....	.....	....	.....	.....	....
36	Camp Davidson	74	8	66	84	30	54	87	35	52	74	31	43
36	Eagle (Fort Egbert)	82	10	72	87	26	61	82	31	51	80	24	56
37	Circle	78	6	72	84	32	52	88	39	49	90	26	64
38	Camp Colonna	68	15	53	79	26	53	85	36	49	.....	.....	....
39	Rampart	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
40	Tanana (1) (Fort Adams)	72	11	61	.....	.....	....	.....	.....	....	79	28	51
41	Tanana (2) (Fort Gibbon)	.....	22	....	.....	.....	....	.....	.....	....	.....	36?	....
42	Nulato (St. Peter Mission)	71	7	64	.....	.....	....	.....	.....	....	.....	.....	....
43	Anvik	67	14	53	.....	.....	....	.....	.....	....	65?	40	25
44	Holy Cross (mission)	65	− 4	69	81	24	67	83	31	52	75?	30	45
45	Ikogmut	72	14?	58	.....	.....	....	.....	.....	....	76?	29?	47
46	Kolmakof	66?	19	47	.....	.....	....	67	35	32	(75)	17	58
	Copper River Plateau.												
47	Copper Center	.....	.....	....	.....	.....	....	94	38	56	85	28	57

Extreme temperatures and ranges

No.	Stations.	September.			October.			November.			December.		
		Max.	Min.	R.	Max.	Min.	R.	Max.	Min.	R.	Max.	Min.	R.
	Pacific coast.	° F.	° F.	°F.	° F.	° F.	°F.	° F.	° F.	°F.	° F.	° F.	°F.
1	Fort Tongass	67*	38*	29	58*	37*	21	51*	32*	19	47*	24*	23
2	Fort Wrangell	73	38*	35	67*	31*	36	53	4*	49	52*	− 3*	55
3	Killisnoo	69	27	42	60	25	35	53	1	52	54	1	53
4	Juneau (1)	85	31	54	66	20	46	60	− 1	61	45	1	44
5	Juneau (2) (wharf)	65	34	31	65	23	42	56	10	46	54	8	46
6	Skagway	76	30	46	60	16	44	51	7	44	57	− 4	61
7	Sitka	74*	32	42	67*	25	42	59*	5*	54	59	7*	52
8	Nuchek (Fort Constantine)	.....	.....	....	65	22	43	45	*10*	35	41	13	28
9	Orca	74	31	43	59	25	34	48	11	37	48	7	41
10	Fort Liscum	64	25	39	53	18	35	45	0	45	41	−13	54
11	Kenai	65	16	49	60	−10	70	44	−26	70	45	*−43*	88
12	Tyonok	70	25	45	61	10	51	44	13	31	49	−21	70
13	Kodiak (1)	68?	36	32	59	30	29	53	15	38	50	− 6	56
14	Kodiak (2) (Woody Island)	72	36	36	66	22	44	54	9	45	49	*−12*	61
	Alaska Peninsula.												
15	Ugashik	75	22	53	56	0	56	46	−27	73	46	−26	72
16	Mine Harbor (Herendeen Bay)	62	32	30	.....	.....	....	.....	.....	....	.....	.....	....
17	Coal Harbor (Unga Island)	72*	10	62	60	15	45	59	14	45	50	− 2	52
18	Morzhovoi	61	36	25	51	28?	23	50	23	27	46	10	36
	Aleutian and Commander islands.												
19	Unalaska	68	33	35	62	26	36	54	19	35	50	12	38
20	Atka Island	62	34	28	54	28	26	49	22	27	45	*12*	33
21	Kiska Island	62	29	33	54	24	30	47	18	29	42	18	24
22	Attu Island	58	36	22	49	30	19	46	25	21	44	22	22
23	Bering Island	59*	30	29	51	18	33	44	7	37	41	− *1*	42
	Bering Sea coast.												
24	Fort Alexander	71	21	50	65	9	56	47	−12	59	43	− 29	72
25	Carmel Mission (Nushagak)	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
26	Bethel Mission	.....	.....	....	.....	.....	....	35	−38	73	35	*−51*	86
27	St. Michael	69	21	48	60	6	54	43	−22	65	45	−43	88
28	Omalik (mine)	.....	.....	....	36?	− 2	38?	32?	−29	61?	.....	−29	....
	Bering Sea islands.												
29	Gambell (St. Lawrence Island)	50	21	29	44†	12	32	36	−19	55	33†	−16?	49?
30	St. Paul Island	54	31	23	56*	25	31	43	18	25	42	4	38
	Arctic coast.												
31	Kikiktak (Friends' Mission)	63	11	52	45	−14	59	38	−26	64	29	−40	69
32	Point Hope (mission at Tikira)	60*	29	31	39	− 1	40	34	−21	55	28*	−36	54
33	Utkiavi (Cape Smyth)	52	20	32	42?	−22	64?	30	−36	66	14	*−55*	69
	Interior stations.												
34	Fort Reliance	67	12	55	55	−11	66	36	−50	86	34	−69	103
35	Camp Davidson	66	14	52	52	4	48	34	−35	69	17	*−49*	66
36	Eagle (Fort Egbert)	78	8	70	68	−28	96	39	−52	91	39	−68	107
37	Circle	84	2	82	(38)	(−12)	50	28	−52	80	32	−53	85
38	Camp Colonna	.....	.....	....	34	− 6	40	35	−36	71	17	−43	60
39	Rampart	.....	(22?)	....	45	−12	57	28	−52	80	30	−53	83
40	Tanana (1) (Fort Adams)	72	12	60	54	−21	75	36	−53	89	17	−68	85
41	Tanana (2) (Fort Gibbon)	.....	23	....	53	− 9	62	15	−45	59	25	*−64*	89
42	Nulato (St. Peter Mission)	.....	.....	....	47	−13	60	28	−36	64	31	−54	85
43	Anvik	66	11	55	51	−18	69	41	−35	76	25	−44	69
44	Holy Cross (mission)	68	14	54	57	−14	71	44	−25	69	48	−50	98
45	Ikogmut	68?	24	44	50	− 5	55	41	−34	75	42	*−53?*	95?
46	Kolmakof	68	5	63	59	−14	73	39	−41	80	41	−53	94
	Copper River Plateau.												
47	Copper Center	68	19	49	66	1	67	32	−46	78	34	*−53*	87

in Alaska Territory—Continued.

No.	Stations.	Length of record. Years.	Mos.	Dates of records.
	Pacific coast.			
1	Fort Tongass	2	4	June, 1868, to Sept., 1870.
2	Fort Wrangell	1	51	June to Aug., 1868; Apr., 1869, to Sept. 26, 1870; Feb., 1875, to June 14, 1877; Aug. 25 to Dec., 1881; Feb. to Mar., June to Aug., 1882.
3	Killisnoo	17	32	May, 1881, to Feb., 1885; June to Oct., 1885; Mar. to Dec., 1886; Jan. to Mar., Sept. to Dec., 1888; Jan., 1889, to Dec., 1902.
4	Juneau (1)	2	38	June, 1881, to Mar., 1882; May, 1883, to Oct., 1884; Nov. 13, 1889, to Jan., 1892; Nov. 16, 1894, to Jan., 1895; June 17–Sept., 1895; Sept., 1896, to Feb., 1897.
5	Juneau (2) (wharf)	4	1	Dec., 1898, to Dec., 1902.
6	Skagway	0	31	Nov., 1898, to July, 1899; Sept., 1899, to Aug., 1900; Sept., Oct., 1901; May to Dec., 1902.
7	Sitka	17	44	Nov., 1867, to May, 1877; Apr., 1881, to Sept., 1887; July, 1898, to Feb., 1899; May, 1899, to Dec., 1902.
8	Nuchek (Fort Constantine)	0	11	Oct., 1883, to Aug. 31, 1884.
9	Orca	0	31	June, 1899, to May, 1900; Oct. 7, 1900, to Mar., 1901; July, 1901, to Mar., 1902; Sept. 17 to Dec., 1902.
10	Fort Liscum	2	0	Jan., 1901, to Dec., 1902.
11	Kenai	4	12	May to Aug. and Oct. to Dec., 1899; Jan., 1900, to Dec., 1902. (Min. also Jan., 1885, to May, 1886.)
12	Tyonok	4	2	Nov., 1898, to Dec., 1902.
13	Kodiak (1)	0	23	Nov., 1895, to Aug., 1896, and Nov., 1898, to Nov., 1899.
14	Kodiak (2) (Woody Island)	0	22	Jan., 1900, to Dec., 1902; missing are Sept., 1900, and Oct., 1902.
	Alaska Peninsula.			
15	Ugashik	2	3	Nov. 11, 1883, to Dec. 13, 1885; Aug., 1883.
16	Mine Harbor (Herendeen Bay)	0	2	Aug. and Sept., 1902.
17	Coal Harbor (Unga Island)	10	26	Sept., 1889, to Sept., 1890; Aug., 1891, to Sept., 1902.
18	Morzhovoi	0	18	Nov., 1881, to May 7, 1882; July, 1882, to May 24, 1883.
	Aleutian and Commander islands.			
19	Unalaska	4	10	July, 1881, to Apr., 1886.
20	Atka Island	3	16	May 7, 1879, to Aug., 1879; Oct., 1881, to May 12, 1885; May, 1886 to Aug., 1886.
21	Kiska Island	0	11½	May 13, 1885, to Apr. 30, 1886.
22	Attu Island	0	9	Aug., 1880, to Apr. 30, 1881.
23	Bering Island	2	24	June, 1882, to May, 1886.
	Bering Sea coast.			
24	Fort Alexander	2	25	Aug., 1881, to June, 1883; June 15, 1884, to June 12, 1886.
25	Carmel Mission (Nushagak)	0	6	1902.
26	Bethel Mission	0	4	Nov., 1885, to Feb., 1886.
27	St. Michael	7	27	Aug., 1877, to Dec., 1878; July, 1880, to June, 1886; Oct., 1899, to July, 1901.
28	Omalik (mine)	0	12	Jan. 20 to May, and Oct. 18 to Dec., 1884; Jan. to Apr. 16, 1885.
	Bering Sea islands.			
29	Gambell (St. Lawrence Island)	2	32	Oct., 1894, to Sept., 1897; Nov., 1898, to June, 1899; Oct., 1901, to Sept., 1902.
30	St. Paul Island	1	34	Oct., 1869, to June, 1870; May 1–15, 1878, to May, 1879; June, 1881, to May, 1883.
	Arctic coast.			
31	Kikiktak (Friends' Mission)	3	9	Sept. 19, 1897, to May, 1901.
32	Point Hope (mission at Tikira)	1	12	Aug., 1894, to July, 1896.
33	Utkiavi (Cape Smyth)	1	22	Oct. 17, 1881, to Aug. 6, 1883; Sept., 1901, to Aug., 1902.
	Interior stations.			
34	Fort Reliance	0	18	Sept., 1882, to May 8, 1883; Sept. 17, 1885, to May 29, 1886.
35	Camp Davidson	0	13	May, 1890, to May, 1891.
36	Eagle (Fort Egbert)	0	58	Oct., 1882, to May 9, 1883; Aug. 22, 1884, to May 12, 1885; Aug. 16, 1885, to May 19, 1886; Aug. 15, 1899, to Dec., 1900; Nov. and Dec., 1901; Feb. to Dec., 1902.
37	Circle	1	20	Dec. 15, 1896, to June, 1898; Nov., 1898, to Sept., 1899; July, Aug., 1900.
38	Camp Colonna	0	10	Oct. 13, 1889, to July 14, 1890.
39	Rampart	0	6	Oct. 1 to 23 and Nov., 1900, to Feb., 1901; Jan., 1902; (22?) is for Sept. 25 to 30, 1901 only.
40	Tanana (1) (Fort Adams)	0	27	Aug., 1882, to May 22, 1883; Sept., 1883, to Mar., 1884; Aug. 18, 1885, to May, 1886.
41	Tanana (2) (Fort Gibbon)	0	13	Aug., 1901, to May, 1902; Oct. to Dec., 1902.
42	Nulato (St. Peter Mission)	0	12	Oct., 1894, to May, 1895; Jan. to Apr., 1896.
43	Anvik	0	28	Sept., 1882, to May, 1885.
44	Holy Cross (mission)	6	20	Oct., 1893, to June, 1894; Sept., 1894, to Aug., 1901.
45	Ikogmut	0	25	Aug. 18, 1883, to May, 1884; Aug. 16 to 31, and Nov. 9, 1884, to May, 1885; Sept., 1885, to May, 1886.
46	Kolmakof	0	30	Aug., 1883, to Aug. 8, 1884; Aug. 25, 1885, to May 14, 1886.
	Copper River Plateau.			
47	Copper Center	0	5½	July 18 to Dec. 31, 1902.

* Indicates record from observations at 7*a*, 2*p*, 9*p*. † Indicates record from observations at 8*a*, 8*p*.

Mean precipitation, including melted snow, and the mean number of

No.	Stations.	January.		February.		March.		April.	
		Days.	Mean total.	Days.	Mean total.	Days.	Mean total.	Days.	Mean total.
	Pacific coast.								
1	Fort Tongass	18.5	12.92	21.5	10.79	17.5	8.21	19.0	9.57
2	Fort Wrangell	17.6	6.07	20.0	8.11	12.6	*2.89*	16.6	4.11
3	Killisnoo	18.0	5.98	14.9	4.96	15.0	4.04	11.0	[a] 3.50
4	Juneau (1)	18.1	10.61	11.2	*4.85*	18.7	6.62	15.0	5.25
5	Juneau (2) (wharf)	20.0	8.77	11.7	4.38	14.2	4.62	17.0	7.04
6	Skagway	7.5	0.90	2.5	*0.57*	3.0	0.64	10.5	2.39
7	Sitka	16.8	**12.17**	15.9	7.47	18.0	6.70	16.2	5.61
8	Nuchek (Fort Constantine)	23.0	**27.07**	8.0	9.15	21.0	18.02	18.0	16.92
9	Orca	16.0	12.66	8.3	6.40	11.0	11.08	[b] 22.0	[b] 16.35
10	Fort Liscum	17.5	9.67	5.0	1.04	14.5	5.54	9.0	4.50
11	Kenai	5.3	0.78	4.4	*0.70*	7.4	0.97	6.4	0.83
12	Tyonok	7.7	2.15	5.7	0.65	4.5	0.71	4.0	0.88
13	Kodiak (1)	16.0	4.82	14.0	4.44	11.0	4.17	14.0	2.92
14	Kodiak (2) (Woody Island)	12.7	3.15	14.7	4.26	14.7	5.21	10.5	*2.93*
	Alaska Peninsula.								
15	Ugashik	14.0	1.44	7.0	*0.49*	16.0	1.04	14.0	1.14
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor (Unga Island)	14.5	3.96	[d] 13.0	[d] 4.23	14.0	4.26	13.2	5.12
18	Morzhovoi	13.0	7.51	6.5	2.94	4.0	2.20	5.0	1.47
	Aleutian and Commander islands.								
19	Unalaska	26.8	**17.94**	21.0	9.82	22.2	7.76	24.8	9.69
20	Atka Island	21.5	9.05	15.5	6.47	12.0	5.22	15.2	6.66
21	Kiska Island	10	2.06	7	*0.93*	9	3.40	11	2.25
22	Attu Island	24	5.29	15	3.01	22	2.60?	16	*2.16*
23	Bering Island	15.7	*0.70*	13.0	1.59	12.5	0.91	11.5	1.13
	Bering Sea coast.								
24	Fort Alexander	14.2	3.19	7.5	*1.07*	14.5	3.06	10.5	1.67
25	Carmel Mission (Nushagak)	8	1.98	.....	.....	11	.....	8	.....
26	Bethel Mission	6	.....	6	.....	.....	.....	.....	.....
27	St. Michael	8.1	0.85	5.5	*0.24*	7.4	0.52	7.8	0.36
28	Omalik (mine)	3	0.40	3	0.32	3.5	0.15	4	0.07
	Bering Sea islands.								
29	Gambell (St. Lawrence Island)	8	.....	8.6	.....	11.0	.....	10.8	.....
30	St. Paul Island	21.0	3.62	15.0	1.59	16.5	2.45	15.5	1.87
	Arctic coast.								
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	.....	.....	.....	.....
32	Point Hope (mission at Tikira)	2.0	0.05	1.5	*0.03*	3.0	0.49	5.0	0.27
33	Utkiavi (Cape Smyth)	3.7	*0.19*	5.3	0.36	6.6	0.23	6.6	0.32
	Interior stations.								
34	Fort Reliance	5.5	**1.00**	6.5	0.76	4.5	0.23	2.5	*0.07*
35	Camp Davidson	16	0.59	14	0.86	6	*0.22*	9	0.61
36	Eagle (Fort Egbert)	6.2	0.43	5.8	0.55	4.8	*0.39*	8.6	0.76
37	Circle	.....	.....	.....	.....	.....	.....	.....	.....
38	Camp Colonna	14	0.68	16	**2.08**	12	0.81	4	*0.12*
39	Rampart	.....	.....	.....	.....	.....	.....	.....	.....
40	Tanana (1) (Fort Adams)	11.0	1.69	8.6	0.85	13.0	0.68	3.5	*0.44*
41	Tanana (2) (Fort Gibbon)	.....	.....	.....	.....	.....	.....	.....	.....
42	Nulato (St. Peter Mission)	5.0	0.68	7.0	0.91	12.5	**1.46**	>2	>*0.16*
43	Anvik	15.6	1.33	6.0	*0.37*	15.3	1.44	7.6	0.54
44	Holy Cross (mission)	8.0	.....	6.6	.....	10.6	.....	7.4	.....
45	Ikogmut	13.0	1.02	7.3	*0.57*	14.7	1.32	11.0	0.63
46	Kolmakof	10.3	1.29	6.0	*0.52*	14.0	1.18	9.3	0.88
	Copper River Plateau.								
47	Copper Center	.....	.....	.....	.....	.....	.....	.....	.....

[a] For 13 years only. [b] For 1900 only. [d] For 8 years.

NOTE.—Italic figures, minimum for year; heavy faced, maximum for year.

days with 0.01 inch or more precipitation, for each month and the year.

No.	Stations.	May.		June.		July.		August.	
		Days.	Mean total.	Days.	Mean total.	Days.	Mean total.	Days.	Mean total.
	Pacific coast.								
1	Fort Tongass	15.5	7.70	10.3	*6.66*	16.6	10.58	9.6	6.71
2	Fort Wrangell	18.6	3.71	13.7	3.56	15.8	3.69	14.3	3.07
3	Killisnoo	12.3	3.38	9.9	*2.36*	11.7	4.19	16.5	4.90
4	Juneau (1)	16.7	7.36	14.6	4.99	15.5	5.59	15.6	7.53
5	Juneau (2) (wharf)	15.5	4.28	12.7	*3.09*	11.0	3.96	20.2	9.39
6	Skagway	4.7	0.77	5.0	0.60	5.7	1.73	8.5	1.51
7	Sitka	16.1	4.11	13.6	*3.31*	14.9	3.55	16.8	5.84
8	Nuchek (Fort Constantine)	18.5	18.92	10.5	*4.47*	18.5	9.93	13.0	14.13
9	Orca	[b] 20.0	[b] 13.70	[b] 11.0	[b] 4.59	11.0	*4.34*	20.5	19.13
10	Fort Liscum	9.0	2.26	8.0	*0.68*	14.5	4.21	28.5	12.38
11	Kenai	6.4	1.01	5.1	0.73	8.9	1.69	13.4	**3.31**
12	Tyonok	3.7	*0.44*	4.2	0.61	8.2	2.09	17.7	4.71
13	Kodiak (1)	14.0	4.97	9.0	2.11	7.0	*0.80*	10.0	2.37
14	Kodiak (2) (Woody Island)	15.0	5.21	8.7	3.13	11.3	4.02	17.3	4.64
	Alaska Peninsula.								
15	Ugashik	[c] 17.0	[c] 1.50	11.5	1.14	25.5	2.90	23.5	3.51
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor (Unga Island)	11.8	*2.49*	10.4	*2.49*	10.6	2.81	13.6	3.74
18	Morzhovoi	[e] 8.0	[e] 5.56	.....	.....	[f] 5.0	[f] 2.67	11.0	5.02
	Aleutian and Commander islands.								
19	Unalaska	17.2	5.20	11.2	4.94	14.8	*2.97*	15.2	3.39
20	Atka Island	15.8	6.14	13.6	4.50	12.6	5.28	14.6	5.67
21	Kiska Island	6?	3.94?	10	3.38	12	6.39	13	**8.10**
22	Attu Island	.....	.....	.....	.....	.....	.....	13	4.62
23	Bering Island	8.5	0.96	12.5	1.67	15.7	2.46	16.0	2.09
	Bering Sea coast.								
24	Fort Alexander	14.2	2.43	13.0	1.88	16.7	4.13	14.0	4.49
25	Carmel Mission (Nushagak)	10	1.30	2	0.40	14	3.00	.....	.....
26	Bethel Mission	.....	.....	.....	.....	.....	.....	.....	.....
27	St. Michael	9.1	1.27	10.4	1.45	13.6	2.53	16.7	3.27
28	Omalik (mine)	2	*0.02*	.....	.....	.....	.....	.....	.....
	Bering Sea islands								
29	Gambell (St. Lawrence Island)	6.8	.....	6.0	.....	8.0	.....	11.3	.....
30	St. Paul Island	21.3	2.12	8?	*1.13*	10.0	2.77	14.0	3.39
	Arctic coast.								
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	.....	.....	.....	.....
32	Point Hope (mission at Tikira)	3.5	0.21	3.5	0.51	8.0	0.88	11.5	1.02
33	Utkiavi (Cape Smyth)	6.6	0.25	9.0	0.47	11.6	**1.34**	10.0	0.97
	Interior stations.								
34	Fort Reliance	6.0	0.69?	.....	.....	.....	.....	.....	.....
35	Camp Davidson	7	0.56	11	2.21	14	1.74	16	**2.96**
36	Eagle (Fort Egbert)	6.5	0.76	9.5	1.36	13.0	**2.22**	13	1.99
37	Circle	.....	.....	4	0.54	8.5	1.98	9	**2.72**
38	Camp Colonna	4	0.60	5	0.27	.....	.....	.....	.....
39	Rampart	.....	.....	.....	.....	.....	.....	.....	.....
40	Tanana (1) (Fort Adams)	12.0	1.51	.....	.....	.....	.....	16.0	2.16
41	Tanana (2) (Fort Gibbon)	.....	.....	.....	.....	.....	.....	.....	.....
42	Nulato (St. Peter Mission)	4	0.36	.....	.....	.....	.....	.....	.....
43	Anvik	7.0	0.63	.....	.....	.....	.....	[h] 13	[h] **2.75**
44	Holy Cross (mission)	5.1	.....	8.7	.....	12.0	.....	18.6	.....
45	Ikogmut	9.0	1.79	.....	.....	.....	.....	8.5	.....
46	Kolmakof	.....	.....	.....	.....	.....	.....	19.0	**7.36**
	Copper River Plateau.								
47	Copper Center	.....	.....	.....	.....	.....	.....	12.0	1.08

[b] For 1900 only. [c] For 26 days only. [e] May 1 to 24, 1883. [f] July 8 to 31, 1882. [h] August, 1883.

Mean precipitation, including melted snow, and the mean number of days with

No.	Stations.	September.		October.		November.		December.	
		Days.	Mean total.	Days.	Mean total.	Days.	Mean total.	Days.	Mean total.
	Pacific coast.								
1	Fort Tongass	19.3	**17.66**	20.0	14.11	27.0	15.46	19.0	13.33
2	Fort Wrangell	17.2	6.63	13.2	7.36	17.8	**11.27**	22.5	10.41
3	Killisnoo	19.3	7.79	22.3	**7.92**	16.9	5.16	17.6	4.81
4	Juneau (1)	18.4	**12.19**	19.8	10.05	18.4	10.47	19.8	8.16
5	Juneau (2) (wharf)	20.5	11.39	20.0	**11.47**	15.0	7.51	17.6	8.37
6	Skagway	13.5	3.47	12.0	3.22	8.0	2.17	11.7	**3.78**
7	Sitka	19.5	9.67	21.7	11.96	19.5	9.80	18.9	7.88
8	Nuchek (Fort Constantine)	19.0	22.96	22.0	21.50	13.0	10.51	19.0	16.81
9	Orca	16.5	20.81	20.2	**21.98**	12.7	9.21	13.5	11.05
10	Fort Liscum	22.5	14.22	22.0	**14.25**	11.5	6.63	13.0	5.95
11	Kenai	11.7	2.46	10.0	2.06	7.4	1.13	6.0	0.88
12	Tyonok	14.2	**4.86**	12.2	4.15	6.5	0.88	7.2	1.31
13	Kodiak (1)	12.0	1.95	18.0	6.31	18.0	**6.52**	18.0	5.72
14	Kodiak (2) (Woody Island)	10.0	5.98	21.0	**8.95**	9.5	3.55	15.0	7.91
	Alaska Peninsula.								
15	Ugashik	24.0	**5.52**	23.0	2.70	15.5	1.42	16.5	1.61
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor (Unga Island)	15.9	4.58	16.4	5.33	14.4	**5.51**	13.8	4.31
18	Morzhovoi	13.0	7.51	[a] 15.0	[a] **10.26**	17.0	7.92	8.5	1.45
	Aleutian and Commander islands.								
19	Unalaska	23.2	9.85	26.4	14.58	23.4	10.95	24.6	13.99
20	Atka Island	19.0	*3.01*	21.2	10.32	18.0	**11.58**	17.2	7.77
21	Kiska Island	7.0	4.31	19	7.67	22	6.28	17	2.55
22	Attu Island	15	4.06	15	**8.91**	20	6.46	22	6.52
23	Bering Island	13.5	2.50	17.7	2.60	16.5	**2.96**	17.0	1.62
	Bering Sea coast.								
24	Fort Alexander	18.5	**4.98**	11.0	1.99	11.5	2.84	9.0	1.36
25	Carmel Mission (Nushagak)	.....	.....	.....	.....	.....	.....	.....	.....
26	Bethel Mission	.....	.....	.....	.....	4	.....	5	.....
27	St. Michael	18.5	**4.02**	11.4	1.70	11.4	1.15	6.9	0.75
28	Omalik (mine)	.....	.....	.....	0.23	3?	**0.45**	3?	0.18
	Bering Sea islands.								
29	Gambell (St. Lawrence Island)	11.5	.....	6.6	.....	10.8	.....	12.0	.....
30	St. Paul Island	19.5	**6.91**	22.0	6.06	22.7	5.39	21.5	3.38
	Arctic coast.								
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	.....	.....	.....	.....
32	Point Hope (mission at Tikira)	13.0	1.48	7.0	0.25	2.5	0.75	3.5	**1.63**
33	Utkiavi (Cape Smyth)	10.5	0.61	7.0	0.75	6.3	0.39	4.3	0.26
	Interior stations.								
34	Fort Reliance	5.0	0.80?	3.5	0.37	8.0	0.73	5.0	0.43
35	Camp Davidson	16	2.41	6	*0.22*	13	0.72	7	0.33
36	Eagle (Fort Egbert)	9.8	1.07	7.8	0.80	7.0	0.57	5.7	0.45
37	Circle	.....	.....	.....	.....	.....	.....	.....	.....
38	Camp Colonna	.....	.....	.....	.....	8	*0.41*	14	**1.17**
39	Rampart	.....	.....	.....	.....	.....	.....	.....	.....
40	Tanana (1) (Fort Adams)	14.0	1.48	16.0	**2.49**	12.5	2.33	10.0	0.82
41	Tanana (2) (Fort Gibbon)	.....	.....	17	1.57	2	0.14	14	1.36
42	Nulato (St. Peter Mission)	.....	.....	8	1.36	6	1.20	8	1.42
43	Anvik	11	2.04	12.6	1.19	13.3	1.43	.....	.....
44	Holy Cross (mission)	16.3	.....	13.3	.....	9.8	.....	11.0	.....
45	Ikogmut	18.0	3.07	22.0	**3.67**	15.0	3.10	11.5	1.07
46	Kolmakof	17.7	3.70	15.0	1.58	13.0	2.82	9.3	1.80
	Copper River Plateau.								
47	Copper Center	7	0.73	8	2.02	4	1.50	2	0.20

[a] October 1 to 27, 1882.

0.01 inch or more precipitation, for each month and the year—Continued.

No.	Stations.	Year.		Length of record.		Limiting dates.
		Days.	Mean total.	Years.	Months.	
	Pacific coast.					
1	Fort Tongass	213.8	133.10	2	4	June, 1868, to Sept., 1870.
2	Fort Wrangell	199.9	70.88	0	40	June to Aug., 1868; Apr., 1869, to Sept., 1870; Feb., 1875, to May, 1877; Sept., 1881, to Aug., 1882.
3	Killisnoo	185.4	58.97	13	11	Jan., 1889, to Dec., 1902.
4	Juneau (1)	201.8	93.06	2	35	June, 1881, to Mar., 1882; May, 1883, to Oct., 1884; Dec., 1889, to Jan., 1892; Dec., 1894, to Jan., 1895; July to Sept., 1895; Sept., 1896, to Feb., 1897.
5	Juneau (2) (wharf)	195.4	84.27	4	1	Dec., 1898, to Dec., 1902.
6	Skagway	92.6	21.75	0	30	Nov., 1898, to July, 1899; Sept., 1899, to Aug., 1900; Oct., 1901; May to Dec., 1902.
7	Sitka	207.9	88.10	17	42	Sept., 1867, to May, 1877; Apr., 1881, to Sept., 1887, July, 1898, to Dec., 1902.
8	Nuchek (Fort Constantine)	203.5	**190.09**	0	16	May, 1883, to Aug., 1884.
9	Orca	[b] 175.0	[b] 129.31	1	18	Oct., 1899, to Mar., 1901; July, 1901, to Mar., 1902; Oct. to Dec., 1902.
10	Fort Liscum	175.0	81.33	2	0	Jan., 1901, to Dec., 1902.
11	Kenai	92.4	16.55	5	26	Sept., 1882, to May, 1886; May, 1899, to Dec., 1902; June, 1884, and Sept., 1899, missing.
12	Tyonok	95.8	23.44	4	2	Nov., 1898, to Dec., 1902.
13	Kodiak (1)	161	>45.00	0	13	Nov., 1898, to Nov., 1899.
14	Kodiak (2) (Woody Island)	160.4	58.94	0	17	Jan. 5, 1900, to Aug., 1900; Nov., 1900, to Mar., 1901; May, 1901, to Aug., 1902.
	Alaska Peninsula.					
15	Ugashik	207.5	24.41	2	0	Jan., 1884, to Dec., 1885.
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	
17	Coal Harbor (Unga Island)	161.6	48.78	9	0	Jan., 1894, to Dec., 1902.
18	Morzhovoi	106	.....	.....	17	Nov., 1881, to Apr., 1882; July 8, 1882, to May 24, 1883.
	Aleutian and Commander islands.					
19	Unalaska	**250.8**	111.08	4	10	July, 1881, to Apr., 1886.
20	Atka Island	196.2	81.67	3	14	June, 1879, to Aug., 1879; Oct., 1881, to Apr., 1885; May to Aug., 1886.
21	Kiska Island	143	>60.30	0	11½	May 13, 1885, to Apr., 1886.
22	Attu Island	.....	.....	0	9	Aug., 1880, to Apr., 1881.
23	Bering Island	170.1	21.19	2	23	June, 1882, to Apr., 1886.
	Bering Sea coast.					
24	Fort Alexander	154.6	33.09	2	23	Aug., 1881, to June, 1883; July, 1884, to May, 1886.
25	Carmel Mission (Nushagak)	.....	.....	0	6	Jan., and Mar. to July, 1902.
26	Bethel Mission	.....	.....	0	4	Nov., 1885, to Feb., 1886.
27	St. Michael	126.8	18.11	7	6	Aug., 1877, to Dec., 1878; July, 1880, to June, 1882; Sept., 1882, to June, 1886.
28	Omalik (mine)	.....	.....	0	9½	Feb. to May, and Oct. 18 to Dec., 1884; Jan. to Mar., 1885.
	Bering Sea islands.					
29	Gambell (St. Lawrence Island)	116.4	.....	2	32	Oct., 1894, to Sept., 1897; Nov., 1898, to June, 1899; Oct., 1901, to Sept., 1902; days with rain are recorded.
30	St. Paul Island	207.0	40.68	1	29	Oct., 1869, to June, 1870; Oct., 1878, to May, 1879; June, 1881, to May, 1883.
	Arctic coast.					
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	
32	Point Hope (mission at Tikira)	64.0	7.57	1	12	Aug., 1894, to July, 1896.
33	Utkiavi (Cape Smyth)	*87.5*	*6.14*	1	21	Nov., 1881, to July, 1883; Sept., 1901, to Aug., 1902.
	Interior stations.					
34	Fort Reliance	.....	>5.08	.....	16	Sept., 1882, to Apr., 1883; Oct., 1885, to May, 1886.
35	Camp Davidson	.....	>13.43	.....	13	May, 1890, to May, 1891.
36	Eagle (Fort Egbert)	97.7	11.35	0	52	Oct., 1882, to Apr., 1883; Sept., 1884, to Apr., 1885; Sept., 1885, to Apr., 1886; Sept., 1899, to Dec., 1900; Nov. and Dec., 1901; Feb. to Dec., 1902.
37	Circle	.....	.....	0	5	June, 1897; June, 1898; July, 1897; July, 1900; Aug., 1900.
38	Camp Colonna	.....	>6.14	0	8	Nov., 1889, to June, 1890.
39	Rampart	.....	.....	.....	.....	
40	Tanana (1) (Fort Adams)	.....	>15.45	0	26	Aug., 1882, to Apr., 1883; Sept., 1883, to Mar., 1884; Sept., 1885, to May, 1886.
41	Tanana (2) (Fort Gibbon)	.....	.....	0	3	Oct., to Dec., 1902.
42	Nulato (St. Peter Mission)	.....	>7.55	0	10	Oct., 1894, to May, 1895; and Jan. 3 to Mar., 1896.
43	Anvik	.....	>11.72	0	26	Sept., 1882, to May, 1885; June, July, and Aug., missing, except Aug., 1883.
44	Holy Cross (mission)	127.4	21.0±	6	11	Oct., 1893, to June, 1894; Sept., 1894, to Sept., 1896; June, 1897, to May, 1899; Aug., 1899, to Aug., 1901.
45	Ikogmut	.....	>16.24	0	22	Sept., 1883, to May, 1884; Sept. to Oct., 1884; Jan. to May, 1885; Oct., 1885, to May, 1886.
46	Kolmakof	.....	>21.13	0	24	Aug., 1883, to July, 1884; Sept., 1885, to Apr., 1886. (Very incomplete.)
	Copper River Plateau.					
47	Copper Center	.....	>5.53	0	5	1902.

[b] For 1900 only.

Maximum precipitation, in

No.	Station.	January.	February.	March.	April.	May.	June.	July.
	Pacific coast.							
1	Fort Tongass	3.58	*1.02*	1.50	1.80	1.30	2.16	1.60
2	Fort Wrangell	1.50	**3.70**	*1.00*	1.99	2.03	1.70	1.66
3	Killisnoo	1.80	2.30	*1.10*	1.30	1.85	1.20	**2.50**
4	Juneau (1)	2.55	2.44	1.93	1.57	*1.41*	>1.75?	1.87
5	Juneau (2) (wharf)	3.17	1.60	1.60	2.58	*1.02*	1.10	2.00
6	Skagway	*0.21*	0.52	0.90	0.90	0.45	0.35	0.92
7	Sitka	3.84	5.00	3.14	4.40	3.04	2.23	*1.31*
8	Nuchek (Fort Constantine)	5.18	4.59	3.07	*2.95*	4.00	3.49	4.49
9	Orca	2.60	2.70	5.24	[a] 1.75	[a] 2.33	[a] *1.45*	2.08
10	Fort Liscum	1.85	0.70	2.54	1.30	1.59	*0.21*	1.93
11	Kenai	0.70	*0.61*	1.12	0.76	1.01	0.55	0.84
12	Tyonok	1.00	*0.50*	0.64	0.75	0.63	0.70	0.85
13	Kodiak (1)	0.84	0.77	1.29	0.57	**1.38**	0.76	*0.37*
14	Kodiak (2) (Woody Island)	1.00	1.40	**1.50**	1.00	**1.50**	*0.88*	1.00
	Alaska Peninsula.							
15	Ugashik	0.37	*0.22*	0.41	0.25	[b] 0.46	0.54	0.65
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor (Unga Island)	1.42	1.80	*1.25*	**5.00**	2.00	2.00	2.00
18	Morzhovoi	1.75	1.64	1.45	1.20	[c] 1.50	.....	[d] 1.10
	Aleutian and Commander islands.							
19	Unalaska	**5.58**	4.66	3.86	4.16	3.28	3.19	2.49
20	Atka Island	2.20	*1.75*	2.40	1.80	2.60	2.15	**3.35**
21	Kiska Island	0.54	*0.28*	1.80	0.35	1.65?	0.80	**2.00**
22	Attu Island	0.66	0.68	*0.22?*	0.44	.....	.....	.....
23	Bering Island	*0.40*	1.05	0.86	0.59	0.66	0.47	**1.55**
	Bering Sea coast.							
24	Fort Alexander	1.14	0.72	1.17	0.81	0.85	0.82	0.93
25	Carmel Mission (Nushagak)	0.50	.....	0.65	**0.74**	0.35	*0.28*	0.67
26	Bethel Mission	.....	.....	.....	.....	.....	.....	.....
27	St. Michael	0.79	0.27	0.39	*0.21*	0.86	0.80	1.47
28	Omalik (mine)	0.22	0.20	0.08	0.08	*0.01*	.....	.....
	Bering Sea islands.							
29	Gambell (St. Lawrence Island)	.....	.....	.....	.....	.....	.....	.....
30	St. Paul Island	**1.90**	0.75	0.55	0.75	0.64	.....	[e] 0.53?
	Arctic coast.							
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	.....	.....	.....
32	Point Hope (mission at Tikira)	*0.04*	*0.04*	0.54	0.17	0.14	0.42	0.47
33	Utkiavi (Cape Smyth)	0.19	0.19	*0.12*	0.21	0.14	0.24	**0.69**
	Interior stations.							
34	Fort Reliance	0.31	0.30	0.17	*0.07*	0.21	.....	.....
35	Camp Davidson	0.11	0.20	*0.09*	0.23	0.24	0.59	0.29
36	Eagle (Fort Egbert)	*0.30*	0.47	0.43	0.41	0.39	0.64	0.52
37	Circle	.....	.....	.....	.....	.....	0.30	0.65
38	Camp Colonna	0.21	**0.93**	0.17	*0.08*	0.55	0.16	.....
39	Rampart	.....	.....	.....	.....	.....	.....	.....
40	Tanana (1) (Fort Adams)	1.00	0.84	0.18	*0.11*	0.36	.....	.....
41	Tanana (2) (Fort Gibbon)	.....	.....	.....	.....	.....	.....	.....
42	Nulato (St. Peter Mission)	0.38	0.45	0.42	0.24	*0.12*	.....	.....
43	Anvik	**1.10**	*0.13*	0.47	0.28	0.37	0.25?	.....
44	Holy Cross (mission)	1.11	0.60?	0.98	0.45	*0.36*	**1.60?**	0.71
45	Ikogmut	0.28	*0.18*	0.54	0.23	>0.67?	.....	.....
46	Kolmakof	0.66	1.03	*0.35*	0.50	0.64	.....	0.47
	Copper River Plateau.							
47	Copper Center	.....	.....	.....	.....	.....	.....	.....

[a] For 1900 only. [b] For 26 days only. [c] For May 1 to 24, 1883. [d] For July 8 to 31, 1882. [e] For 29 days, July, 1876.

inches, in twenty-four hours.

No.	Station.	August.	September.	October.	November.	December.	Length of record.	
							Years.	Months.
	Pacific coast.							
1	Fort Tongass	3.20	3.10	**5.15**	2.15	1.70	2	4
2	Fort Wrangell	1.08	2.00	3.12	3.15	2.11	0	40
3	Killisnoo	1.35	1.90	2.15	2.20	1.60	13	11
4	Juneau (1)	**3.95**	2.37	2.00	>3.10?	2.01	2	35
5	Juneau (2) (wharf)	1.94	**4.00**	2.30	2.97	2.41	4	1
6	Skagway	0.53	0.90	1.00	0.63	**1.72**	0	30
7	Sitka	4.79	3.79	**6.55**	5.05	2.82	17	42
8	Nuchek (Fort Constantine)	3.60	3.35	4.37	3.50	3.15	0	16
9	Orca	3.42	6.70	**7.41**	3.02	3.25	1	18
10	Fort Liscum	1.60	2.08	2.05	**3.80**	1.66	2	0
11	Kenai	1.20	*0.64*	**1.77**	0.83	0.93	5	25
12	Tyonok	**2.00**	1.10	1.90	0.88	1.40	4	2
13	Kodiak (1)	0.68	0.48	**1.38**	1.35	0.84	0	13
14	Kodiak (2) (Woody Island)	1.00	1.05	1.35	*0.80*	1.25	0	17
	Alaska Peninsula.							
15	Ugashik	1.11	**1.20**	0.55	0.53	0.40	2	0
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor (Unga Island)	1.90	1.90	2.05	2.07	1.35	9	0
18	Morzhovoi	1.60	**2.07**	*f* 1.75	2.00	*0.40*	0	17
	Aleutian and Commander islands.							
19	Unalaska	*1.98*	2.65	5.38	4.73	5.56	4	10
20	Atka Island	1.95	2.16	2.30	3.20	2.95	3	14
21	Kiska Island	1.58	1.15	**2.00**	1.30	0.85	0	11½
22	Attu Island	1.14	1.36	**1.93**	1.08	0.72	0	9
23	Bering Island	**1.12**	0.94	1.13	1.17	0.65	2	23
	Bering Sea coast.							
24	Fort Alexander	**2.72**	1.16	0.79	1.28	*0.66*	2	23
25	Carmel Mission (Nusbagak)	.....	.....	.....	.....	.....	0	6
26	Bethel Mission	.....	.....	.....	.....	.....	0	4
27	St. Michael	**2.65**	1.95	1.85	0.95	1.14	7	6
28	Omalik (mine)	.....	.....	.....	**0.22**	0.12	0	9½
	Bering Sea islands.							
29	Gambell (St. Lawrence Island)	.....	.....	.....	.....	.....	2	32
30	St. Paul Island	.....	*0.50*	1.62	0.65	1.61	1	29
	Arctic coast.							
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	.....	.....	.....
32	Point Hope (mission at Tikira)	0.39	0.73	0.14	1.33	**1.75**	1	12
33	Utkiavi (Cape Smyth)	0.30	0.29	0.53	0.20	0.21	1	21
	Interior stations.							
34	Fort Reliance	.....	**0.35?**	0.17	0.30?	0.30?	0	16
35	Camp Davidson	0.75	**1.05**	*0.08*	0.16	0.10	0	13
36	Eagle (Fort Egbert)	**0.75**	0.47	0.47	0.35	*0.23*	0	52
37	Circle	**0.80**	.....	.....	.....	.....	0	5
38	Camp Colonna	.....	.....	.....	0.14	0.28	0	8
39	Rampart	.....	.....	.....	.....	.....	.....	.....
40	Tanana (1) (Fort Adams)	0.37	1.13	**3.05**	1.98	1.06	0	26
41	Tanana (2) (Fort Gibbon)	.....	.....	0.23	*0.10*	0.34	0	3
42	Nulato (St. Peter Mission)	.....	.....	**0.61**	0.31	0.42	0	10
43	Anvik	*g* 0.44	0.71	0.26	0.42	0.27?	0	26
44	Holy Cross (mission)	1.43	1.20	1.40?	0.71	1.03?	6	11
45	Ikogmut	>0.70?	>1.29?	0.98	0.75	0.42	0	22
46	Kolmakof	2.03	1.10	0.59	*h* **4.10**	3.03	0	24
	Copper River Plateau.							
47	Copper Center *i*	0.38	0.27	0.45	**1.20**	*0.10*	0	5

f For October 1 to 27, 1882. *g* For 1883 only. *h* From November, 1882. *i* For 1902 only.

Maximum, minimum, and mean number of rainy days (i.

No.	Stations.	January.			February.			March.			April.			May.		
		Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean
	Pacific coast.															
1	Fort Tongass	22	15	18.5	26	17	21.5	18	17	17.5	23	15	19.0	16	15	15.5
2	Fort Wrangell	21	16	17.6	25	13	20.0	17	7	*12.6*	21	13	16.6	25	12	18.6
3	Killisnoo	25	9	18.0	23	7	14.9	27	7	15.0	21	3	*11.0*	19	6	12.3
4	Juneau (1)	30	9	18.1	14	6	*11.2*	24	15	18.7	17	11	15.0	25	11	16.7
5	Junean (2) (wharf)	23	16	20.0	17	8	11.7	18	10	14.2	23	13	17.0	18	12	15.5
6	Skagway	8	7	7.5	3	2	*2.5*	4	2	3.0	8	13	10.5	7	3	4.7
7	Sitka	24	6	16.8	26	7	15.9	29	9	18.0	24	10	16.2	26	6	16.1
8	Nuchek	.....	.....	23	.....	.....	*8*	.....	.....	21	.....	.....	18	22	15	18.5
9	Orca	16	16	16	11	4	*8.3*	22	1	11.0	.....	.....	*b* **22**	.....	.....	*b* 20
10	Fort Liscum	.....	.....	17.5	.....	.....	*5.0*	.....	.....	14.5	.....	.....	9.0	.....	.....	9.0
11	Kenai	9	0	5.3	9	1	*4.4*	14	3	7.4	11	4	6.4	9	2	6.4
12	Tyonok	9	6	7.7	9	3	5.7	6	2	4.5	6	2	4.0	5	1	*3.7*
13	Kodiak (1)	.....	.....	16	.....	.....	14	.....	.....	11	.....	.....	14	.....	.....	14
14	Woody Island	.....	.....	12.7	.....	.....	14.7	.....	.....	14.7	.....	.....	10.5	.....	.....	15.0
	Alaska Peninsula.															
15	Ugashik	.....	.....	14.0	.....	.....	*7.0*	.....	.....	16.0	.....	.....	14.0	.....	.....	17.0
16	Mine Harbor	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor	20	9	14.5	*e* 19	*e* 6	*e*13.0	20	9	14.0	20	6	13.2	19	6	11.8
18	Morzhovoi	.....	.....	13.0	.....	.....	6.5	.....	.....	*4.0*	.....	.....	5.0	.....	.....	*g* 8.0
	Aleutian and Commander islands.															
19	Unalaska	28	26	**26.8**	26	15	21.0	25	18	22.2	27	19	24.8	24	11	17.2
20	Atka Island	27	19	**21.5**	20	11	15.5	19	7	*12.0*	27	11	15.2	22	12	15.8
21	Kiska Island	.....	.....	10	.....	.....	7	.....	.....	9	.....	.....	11	.....	.....	*6?*
22	Attu Island	.....	.....	**24**	.....	.....	15	.....	.....	22	.....	.....	16	.....	.....	.....
23	Bering Island	20	12	15.7	19	8	13.0	15	10	12.5	18	7	11.5	13	10	*8.5*
	Bering Sea coast.															
24	Fort Alexander	23	5	14.2	12	0	*7.5*	18	10	14.5	16	5	10.5	18	11	14.2
25	Carmel Mission	.....	.....	8	.....	.....	.....	.....	.....	11	.....	.....	8	.....	.....	10
26	Bethel Mission	.....	.....	6	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	St. Michael	13	2	8.1	12	0	*5.5*	14	1	7.4	16	1	7.8	14	5	9.1
28	Omalik (mine)	.....	.....	3	.....	.....	3	.....	.....	3.5	.....	.....	4	.....	.....	2
	Bering Sea islands.															
29	Gambell	12	4	8.0	15	3	8.6	18	7	11.0	23	4	10.8	12	2	6.8
30	St. Paul Island	25	19	21.0	19	12	15.0	16	12	16.5	21	7	15.5	26	10	21.3
	Arctic coast.															
31	Kikiktak	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	Point Hope	2	2	2.0	2	1	*1.5*	3	3	3.0	9	1	5.0	7	0	3.5
33	Utkiavi (Cape Smyth)	6	0	*3.7*	12	2	5.3	12	1	6.6	11	0	6.6	15	0	6.6
	Interior stations.															
34	Fort Reliance	9	2	5.5	10	3	6.5	7	2	4.5	4	1	*2.5*	6	6	6.0
35	Camp Davidson	.....	.....	16	.....	.....	14	.....	.....	*6*	.....	.....	9	.....	.....	7
36	Eagle (Fort Egbert)	8	3	6.2	9	0	5.8	8	2	*4.3*	13	6	8.6	7	6	6.5
37	Circle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38	Camp Colonna	.....	.....	14	.....	.....	**16**	.....	.....	12	.....	.....	*4*	.....	.....	*4*
39	Rampart	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	Fort Adams	14	5	11.0	11	5	8.6	13	6	13.0	6	1	*3.5*	12	12	12.0
41	Fort Gibbon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
42	Nulato	5	0	5.0	8	6	7.0	16	9	**12.5**	>3	2	>*2*	.....	.....	4.0
43	Anvik	22	8	**15.6**	9	3	*6.0*	20	13	15.3	15	4	7.6	8	6	7
44	Holy Cross (mission)	14	1	8.0	11	2	6.6	14	5	10.6	13	3	7.4	11	2	*5.1*
45	Ikogmut	17	9	13.0	9	5	*7.3*	17	13	14.7	16	5	11.0	14	8	9.0
46	Kolmakof	18	2	10.3	11	3	*6.0*	20	8	14.0	17	4	9.3	.....	.....	.....
	Copper River Plateau.															
47	Copper Center	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

number of days with rain or melted snowfall ≧0.01 inch).

No.	Stations.	June.			July.			August.			September.			October.		
		Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean
	Pacific coast.															
1	Fort Tongass	15	7	10.3	22	13	16.6	18	4	*9.6*	23	9	19.3	22	18	20.0
2	Fort Wrangell	18	6	13.7	20	8	15.8	20	10	14.3	24	14	17.2	17	10	13.2
3	Killisnoo	16	3	*9.9*	21	4	11.7	28	4	16.5	26	14	19.3	28	16	**22.3**
4	Juneau (1)	17	11	14.6	19	13	15.5	20	8	15.6	26	13	18.4	27	8	**19.8**
5	Juneau (2) (wharf)	20	9	12.7	13	7	*11.0*	25	16	20.2	25	16	**20.5**	26	15	20.0
6	Skagway	11	1	5.0	10	3	5.7	17	[a]0	8.5	17	10	**13.5**	16	9	12.0
7	Sitka	20	6	*13.6*	23	8	14.9	28	8	16.8	26	13	19.5	28	13	**21.7**
8	Nuchek	12	9	10.5	23	14	18.5	16	10	13.0	.....	.....	19	.....	.....	22
9	Orca	.....	.....	[b]11	13	9	11.0	22	19	20.5	19	14	16.5	14	25	20.2
10	Fort Liscum	.....	.....	8.0	.....	.....	14.5	.....	.....	**28.5**	.....	.....	22.5	.....	.....	22.0
11	Kenai	11	1	5.1	12	5	8.9	19	8	**13.4**	21	5	11.7	14	3	10.0
12	Tyonok	7	0	4.2	9	5	8.2	20	17	**17.7**	16	11	14.2	15	7	12.2
13	Kodiak (1)	.....	.....	9	.....	.....	7	.....	.....	10	.....	.....	12	.....	.....	18
14	Woody Island	.....	.....	*8.7*	.....	.....	11.3	.....	.....	17.3	.....	.....	10	.....	.....	21
	Alaska Peninsula.															
15	Ugasbik	.....	.....	11.5	.....	.....	**25.5**	.....	.....	23.5	.....	.....	24.0	.....	.....	23.0
16	Mine Harbor	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor	21	3	*10.4*	15	6	10.6	24	8	13.6	23	11	15.9	20	11	**16.4**
18	Morzhovoi	.....	.....	.....	.....	.....	[e]5.0	.....	.....	11.0	.....	.....	13.0	.....	.....	[f]15.0
	Aleutian and Commander islands.															
19	Unalaska	13	8	*11.2*	18	10	14.8	18	12	15.2	27	19	23.2	30	23	26.4
20	Atka Island	18	10	13.6	20	4	12.6	17	12	14.6	23	16	19.0	23	20	21.2
21	Kiska Island	.....	.....	10	.....	.....	12	.....	.....	13	.....	.....	7	.....	.....	19
22	Attu Island	.....	.....	.....	.....	.....	.....	.....	.....	*13*	.....	.....	15	.....	.....	15
23	Bering Island	20	5	12.5	20	12	15.7	19	14	**16.0**	16	10	13.5	23	12	**17.7**
	Bering Sea coast.															
24	Fort Alexander	14	12	13.0	21	12	**16.7**	15	13	14.0	21	15	18.5	17	4	11.0
25	Carmel Mission	.....	.....	*2*	.....	.....	**14**	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	Betbel Mission	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	St. Michael	19	5	10.4	22	5	13.6	25	10	16.7	22	9	**18.5**	23	6	11.4
28	Omalik (mine)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Bering Sea islands.															
29	Gambell	13	2	*6.0*	13	5	8.0	20	11	11.3	13	10	11.5	9	3	6.6
30	St. Paul Island	12	3	*8.0?*	15	5	10.0	15	12	14.0	21	18	19.5	29	17	22.0
	Arctic coast.															
31	Kikiktak	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	Point Hope	4	3	3.5	11	5	8.0	18	5	11.5	15	11	**13.0**	9	5	7.0
33	Utkiavi (Cape Smyth)	10	7	9.0	12	11	**11.6**	15	5	10.0	15	6	10.5	12	2?	7.0
	Interior stations.															
34	Fort Reliance	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	5	5.0	5	2	3.5
35	Camp Davidson	.....	.....	11	.....	.....	14	.....	.....	**16**	.....	.....	**16**	.....	.....	*6*
36	Eagle (Fort Egbert)	13	6	9.5	13	13	**13.0**	16	10	**13.0**	14	7	9.8	10	6	7.8
37	Circle	.....	.....	4	.....	.....	8.5	.....	.....	9	.....	.....	.....	.....	.....	.....
38	Camp Colonna	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39	Rampart	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	Fort Adams	.....	.....	.....	.....	.....	.....	16	16	**16**	12	8	14.0	20	6	**16.0**
41	Fort Gibbon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17
42	Nulato	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8
43	Anvik	.....	.....	.....	.....	.....	.....	.....	.....	[g]13	19	4	11.0	24	5	12.6
44	Holy Cross (mission)	12	6	8.7	18	6	12.0	29	6	**18.6**	20	11	16.3	19	6	13.3
45	Ikogmut	.....	.....	.....	.....	.....	.....	.....	.....	>8.5?	23	7?	18.0	30	3?	**22.0**
46	Kolmakof	.....	.....	.....	.....	.....	.....	.....	.....	**19**	22	12	17.7	27	2	15.0
	Copper River Plateau.															
47	Copper Center	.....	.....	.....	.....	.....	.....	.....	.....	12	.....	.....	7	.....	.....	8

Maximum, minimum, and mean number of rainy days (i. e., number of days with rain or melted snowfall $\geqq$0.01 inch).

No.	Stations.	November.			December.			Means.	Length of record.	
		Max.	Min.	Mean.	Max.	Min.	Mean.		Years.	Months
	Pacific coast.									
1	Fort Tongass	27	27	**27.0**	23	15	19.0	213.8	2	4
2	Fort Wrangell	24	13	17.8	27	17	**22.5**	199.9	0	40
3	Killisnoo	28	6	16.9	23	10	17.6	185.4	13	11
4	Juneau (1)	30	4	18.4	24	18	**19.8**	201.8	2	35
5	Juneau (2) (wharf)	18	12	15.0	24	8	17.6	195.4	4	1
6	Skagway	10	4	8.0	20	6	11.7	92.6	0	30
7	Sitka	29	13	19.5	28	9	18.9	207.9	17	42
8	Nuchek (Fort Constantine)	.....	.....	13	.....	.....	19	203.5	0	16
9	Orca	16	7	12.7	15	12	13.5	[b]175.0	1	18
10	Fort Liscum	.....	.....	11.5	.....	.....	13.0	175.0	2	0
11	Kenai	13	4	7.4	12	4	6.0	92.4	5	26
12	Tyonok	7	3	6.5	8	3	7.2	95.8	4	2
13	Kodiak (1)	.....	.....	**18**	.....	.....	**18**	[c]161.0	0	13
14	Kodiak (2) (Woody Island)	.....	.....	9.5	.....	.....	15	160.4	0	17
	Alaska Peninsula.									
15	Ugashik	.....	.....	15.5	.....	.....	16.5	[d]207.5	2	0
16	Mine Harbor (Herendeen Bay)	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	Coal Harbor (Unga Island)	23	6	14.4	22	6	13.8	[f]161.6	9	0
18	Morzhovoi	.....	.....	**17.0**	.....	.....	8.5	106.0?	0	17
	Aleutian and Commander islands.									
19	Unalaska	25	22	23.4	26	23	24.6	[k]**250.8**	4	10
20	Atka Island	22	15	18.0	21	10	17.2	196.2	3	14
21	Kiska Island	.....	.....	**22**	.....	.....	17	[l]>143	0	11½
22	Attu Island	.....	.....	20	.....	.....	**22**	[m]>162	0	9
23	Bering Island	18	13	16.5	25	8	**17.0**	[n]170.1	2	23
	Bering Sea coast.									
24	Fort Alexander	16	7	11.5	14	5	9.0	154.6	2	23
25	Carmel Mission (Nushagak)	.....	.....	.....	.....	.....	.....	.....	0	6
26	Bethel Mission	.....	.....	4	.....	.....	5	.....	0	4
27	St. Michael	19	3	11.4	15	2	6.9	126.8	7	6
28	Omalik (mine)	.....	.....	3?	.....	.....	3?	.....	0	9½
	Bering Sea islands.									
29	Gambell (St. Lawrence Island)	22	5	10.8	15	9	**12.0**	116.4	2	32
30	St. Paul Island	27	15	**22.7**	26	19	21.5	207.0	1	29
	Arctic coast.									
31	Kikiktak (Friends' Mission)	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	Point Hope (mission at Tikira)	3	2	2.5	5	2	3.5	64.0	1	12
33	Utkiavi (Cape Smyth)	11	2?	6.3	7	2	4.3	87.5	1	21
	Interior stations.									
34	Fort Reliance	11	5	8.0	8	2	5.0	.....	0	16
35	Camp Davidson	.....	.....	13	.....	.....	7	.....	0	13
36	Eagle (Fort Egbert)	11	4	7.0	8	4	5.7	97.7	0	52
37	Circle	.....	.....	.....	.....	.....	.....	.....	0	5
38	Camp Colonna	.....	.....	8	.....	.....	14	.....	0	8
39	Rampart	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	Tanana (1) (Fort Adams)	14	5	12.5	12	2	10.0	>116	0	26
41	Tanana (2) (Fort Gibson)	.....	.....	2	.....	.....	14	.....	0	3
42	Nulato (St. Peter Mission)	.....	.....	6	.....	.....	8	.....	0	10
43	Anvik	15	11	13.3	.....	.....	.....	>101.4	0	26
44	Holy Cross (mission)	16	5	9.8	16	5	11.0	127.4	6	11
45	Ikogmut	19	11	15	13	10	11.5	>130	0	22
46	Kolmakof	19	7	13	12	7	9.3	>113.6	0	24
	Copper River Plateau.									
47	Copper Center	.....	.....	4	.....	.....	2	.....	0	5

[a] A trace fell on 4 days.
[b] For 1900 only.
[c] Nov., 1898, to Nov., 1899.
[d] Jan., 1884, to Dec., 1885.
[e] For 8 years.
[f] Jan., 1894, to Dec., 1902.
[g] May 1 to 24, 1883.
[h] July 8 to 31, 1882.
[i] Oct. 1 to 27, 1882.
[k] July, 1881, to Apr., 1886.
[l] May, 1885, to Apr., 1886.
[m] Aug., 1880, to Apr., 1881.
[n] June, 1882, to Apr., 1886.
[o] For 1883 only.

Last and first frosts at Alaska stations.

Station and year.	Last killing frost.	Last frost.	First frost.	First killing frost.	Growing days.
Pacific coast province.					
Metlakatla:					
1891			Sept. 30		
1892		Apr. 15	Oct. 14	Nov. 17	225
1893	Apr. 6	May 1	Oct. 19	Oct. 30	207
Fort Tongass:					
1868			Nov. 6	Dec. 19	
1869		Mar. 19	Sept. 29	Dec. 17	210
1870		Mar. 14			
Fort Wrangell:					
1869			Sept. 20	Oct. 15	
1875	Mar. 14	Apr. 20	Oct. 5	Oct. 29	229
1876	Apr. 30	June 5	Sept. 14	Oct. 29	182
1882			Oct. 2	Oct. 8	
Juneau:					
1889			Nov. 18		
1890		Mar. 29	Oct. 6		191?
1891		May 2	Sept. 20		141?
1895			Sept. 10	Sept. 19	
1899			Sept. 4		
1900				Sept. 22	
Chilkoot (Portage Bay):					
1881			Oct. 11		
1882			Sept. 6		
Skagway:					
1899		May 9		Sept. 4	117?
1900	Apr. 9				
1902		July 7	Aug. 27		50?
Howkan:					
1882			Sept. 26		
Killisnoo:					
1884			Sept. 13		
1885			Sept. 28	Oct. 12?	
1888			Oct. 15		
1891		May 6	Sept. 27		>143
1892		Mar. 31	Oct. 14		>197
1893		May 2	Oct. 18		>169
1895			Sept. 3	Sept. 12	
1897			Sept. 27		
Sitka:					
1868		Apr. 21			
1869			Sept. 19		

Last and first frosts at Alaska stations—Continued.

Station and year.	Last killing frost.	Last frost.	First frost.	First killing frost.	Growing days.
Pacific coast province—Continued.					
Sitka—Continued.					
1870			Oct. 19		
1871				Oct. 31	
1872				Oct. 7	
1873	May 27		Nov. 5		>162
1881		May 8			
1900	June 1		Aug. 25	Oct. 1	122
1901				Nov. 1	
Fort Liscum:					
1901				Sept. 29	
Nuchek (Port Etches):					
1883			Oct. 5		
Kenai:					
1883			Sept. 14		
1884			Sept. 24		
1899		June 9		Aug. 25	77?
1900			Aug. 14	Aug. 24	
1901			Aug. 18	Nov. 24?	
1902		June 21	Sept. 1	Sept. 15	86?
Kodiak:					
1899			Sept. 6	Oct. 6	
Woody Island (Kodiak):					
1901			Sept. 2		
Alaska Peninsula.					
Coal Harbor (Unga Island):					
1893			Sept. 15		
1894	May 12	June 8	Sept. 17		>128
1895	May 16	June 12	Sept. 18	Oct. 13	150
1896	May 31			Sept. 10	102
1897				Oct. 24	
1898	May 8		Sept. 8		>123
1899				Sept. 17	
1900	May 29		Sept. 10	Sept. 15	109
1901		June 29			
1902			Sept. 22		
Morzhovoi:					
1881			Oct. 29		
Ugashik:					
1884	Apr. 25			Nov. 3	202
1885				Aug. 19	

Last and first frosts at Alaska stations—Continued.

Station and year.	Last killing frost.	Last frost.	First frost.	First killing frost.	Growing days.
Aleutian Islands.					
Unalaska:					
1879		Feb. 14	Oct. 30		
1881			July 21		
Attu Island:					
1880			Sept. 20		136?
1881		May 7			
Bering Sea coast province.					
St. Michael:					
1877			Sept. 13		
1878			Sept. 2	Sept. 30	
1880			Sept. 18		
1881	May 31?		Sept. 14		106?
1900			Sept. 21		
Carmel Mission:					
1902	May 14	May 28?			
Gambell (St. Lawrence Island):					
1895			Aug. 11	Sept. 5	
1902			Sept. 29		
Arctic Ocean coast.					
Point Hope:					
1894			Sept. 13	Oct. 16	
1895				Oct. 15	
Interior province.					
Fort Reliance:					
1885			Aug. 16	Sept. 27	
Camp Colonna:					
1889				Oct. 17	171?
1890		Apr. 29			
Camp Davidson:					
1890	June 27			Aug. 13	47?
1891	June 3				
Eagle:					
1882			Sept. 1		
1884				Aug. 28	
1885	May 11?			Sept. 1	112?
Circle:					
1898				Nov. 28?	
1899			Aug. 19		
Fort Yukon:					
1899				Sept. 1	
1900			Oct. 4	Oct. 6	

Last and first frosts at Alaskan stations—Continued.

Station and year.	Last killing frost.	Last frost.	First frost.	First killing frost.	Growing days.
Interior province—Continued.					
Holy Cross Mission:					
1894			Oct. 3	Oct. 7	
1895			Sept. 7	Sept. 26	
1899			Aug. 3	Sept. 19	
1900	Apr. 30			Aug. 12	104
1901	May 30			Aug. 31	93
Kolmakof:					
1883			Aug. 23		
1884			Aug. 29	Oct. 12?	
1885			Sept. 20		

Dates of opening and closing of certain Alaska streams.

River and station.	Ice began running.	River clear.	Ice began running.	River closed.
Yukon River.				
Fort Reliance:				
1882			Oct. 22	Nov. 2
1883	May 6			
1885			Oct. 17	Nov. 9
1886	May 15			
Eagle:				
1882			Oct. 13	Nov. 5
1883	May 4	May 9		
1884			Oct. 5	Oct. 10
1885	May 8	May 12	Nov. 9	
1886	May 16	May 19		
1902			Oct. 21	Nov. 19
Circle:				
1898	May 13[a]			
Fort Yukon:				
1899			Oct. 3	Oct. 26
1901	May 20			
1902	May 6	May 20		
Fort Gibbon:				
1902			Oct. 25	Nov. 6
Mouth of the Tanana:				
1882			Oct. 15	Oct. 30
1883	May 10	May 13	Oct. 25	Nov. 4

[a] Yukon River opened 13th of May. Water enough for sluicing on Deadwood; also on Mastodon, 20th of May.

Dates of opening and closing of certain Alaska streams—Continued.

River and station.	Ice began running.	River clear.	Ice began running.	River closed.
Yukon River—Continued.				
Mouth of the Tanana—Continued.				
1885			Oct. 14	Nov. 29 [a]
1886	May 18	May 29		
Nulato:				
1894 [b]				Oct. 16
1895	May 22			
Anvik:				
1882			Oct. 26	Oct. 27
1883	May 15	May 22	Oct. 25	Nov. 7
1884	May 17	May 26	Oct. 5	Oct. 12
1885	May 16	May 22		
Anvik River.				
Anvik:				
1882				Oct. 14
1883	May 12		Oct. 24	
1884	May 14	May 16	Sept. 29	Oct. 1
1885	May 8	May 10		
Yukon River.				
Holy Cross Mission:				
1893	May 19			
1894	May 23	June 1	Oct. 14	Oct. 24
1895	May 22	May 30		
1896	May 27	May 29?	Oct. 10	Nov. 3
1897	May 19	May 21?		Oct. 19
1898	Apr. 30?			
1899			Oct. 5	Oct. 29
1900	Apr. 29	May 20	Oct. 16	Oct. 25
1901	June 1	June 3?		
Ikogmut (Russian mission):				
1885			Oct. 15	Oct. 30
1886	May 26	June 6		
Kuskokwim River.				
Kolmakof:				
1883			Oct. 24	
1884			Oct. 12?	
1885		Apr. 28		Nov. 6
1886	May 11	May 18		
Fort Wrangell River.				
Fort Wrangell:				
1882			Oct. 10	

[a] Nov. 9, water rising on Yukon.

[b] Main channel open until Oct. 24.

Dates of opening and closing of certain Alaska streams—Continued.

River and station.	Ice began running.	River clear.	Ice began running.	River closed.
Kenai River.				
Kenai:				
1899	.....	.....	Dec. 4	Dec. 14
1900	Mar. 18	Mar. 29	.....	.....
Fish River.				
Omalik:				
1884	May 21	.....	.....	Sept. 25
1885	May 9	.....	.....	.....

Dates of opening and closing of bays and harbors.

Station.	Bay opened.	Bay closed.	Station.	Bay opened.	Bay closed.
Fort Tongass:			St. Michael—Continued.		
1868	.....	Nov. 6	1885	June 30	Nov. 5
Kenai:			1886	June 5	Nov. 13
1883	Feb. 7		1887	June 14	Nov. 2
1889	.....	Dec. 27	1888	June 8	Nov. 18
1900	Mar. 29		1889	June 23	Nov. 16
Coal Harbor (Unga I.):			1890	June 5	Nov. 11
1899	Mar. 13	Dec. 9	1891	June 9	Nov. 14
Carmel:			1892	June 11	Nov. 7
1902	May 8		1893	June 10	Nov. 5
Gambell (St. Lawrence I.):			1894	June 23	Nov. 1
1901	.....	Nov. 9	1895	June 18	Dec. 7
1902	Apr. 22		1896	June 25	Nov. 21
St. Michael:			1897	June 22	Oct. 25
1874	.....	Dec. 3	1898	June 13	Oct. 31
1875	May 25	Nov. 20	1899	June 10	Nov. 7
1876	June 8	Nov. 6	1900	June 8	Nov. 22
1877	June 13	Nov. 15	1901	July 3	Nov. 2
1878	June 15	Nov. 15	Friends' Mission: [a]		
1879	June 9	Nov. 9	1897	.....	Oct. 1
1880	June 27	Dec. 6	1898	June 7	Oct. 20
1881	June 11	Dec. 7	Point Hope: [b]		
1882	June 9	Nov. 25	1894	.....	Nov. 19
1883	June 8	Nov. 21	1895	July 17	
1884	June 10	Oct. 10	1896	Aug. 1	

[a] At Kikiktak, Kotzebue Sound.

[b] Near Tikira. "Usually clear from July 1."

SPECIAL CLIMATOLOGIC TABLES.

OBJECT OF TABLES.

The accompanying special tables relating to Killisnoo, Sitka, and Coal Harbor (Unga Island), pages 179–188, are designed to show certain interesting and important features of the respective local climates, which can be studied only after a continuous record extending over a considerable number of years is available. The immediate purpose is to bring out the most frequently recurring values of certain climatic elements and facilitate their comparison with the so-called "mean values," which are the values usually asked for and presented in climatologic papers.

"SCHEITELWERTE."

The "Scheitelwerte" is defined by Prof. J. Hann as the "Temperature which recurs most frequently within a given period of time."[a] From his discussion of this element the following has been extracted:

"Formerly it has been tacitly assumed that these two quantities [Scheitelwerte and mean value] are the same, as is true in the case of the arithmetical mean of observations or measurements of a quantity whose magnitude is always constant, but the observations are subject to accidental errors. Closer investigation, however, has shown that this is not the case with meteorologic data * * * The frequency of the various temperature groups must be counted from many years of observations, however, before one is able to determine the most frequent group with any degree of certainty. * * * The calculation of the frequency of occurrence of definite temperature groups forms a valuable extension and specialization of our knowledge of the temperature conditions of any locality. The briefest expression of such conditions is given in the means, and the 'Scheitelwerte' can not be substituted for them."[b]

MANNER OF CONSTRUCTING TABLES.

A simple table of this class is presented on page 179, which shows the frequency of various maximum temperatures in each month at Killisnoo. The table as printed consists of a series of 12 columns, one for each month, and a series of horizontal lines, to each of which is assigned a given temperature. To construct this table one proceeds as follows:

Having determined all the observed maximum temperatures by months and years, the number of times each maximum temperature has occurred in any month at a station is then entered on the corresponding lines and proper month column of the table. Thus, it was found that the maximum temperature in January reached 42° in six different years, so this fact was recorded by writing the figure 6 on the line numbered 42° and in the column headed January. This procedure is repeated until the number of times of occurrence of every recorded maximum for each month has been entered. The complete table then presents the appearance of the table on page 179.

[a] Hann, J., Lehrbuch der Meteorologie. Wien, 1902. pp. 113–115.
[b] Hann, J., op. cit., pp. 113-114.

USE OF TABLES.

The usual maximum temperature for any month at Killisnoo during the period covered by the table is shown opposite the largest figure in the column for the proper month.

The table shows also at a glance the highest and the lowest maximum temperatures for the months and for the year and furnishes a basis for judging how frequently these extremes have been reached or even approached. By comparing the number of times of occurrence with the number of years of observation one is enabled to judge more accurately of the chances of a given maximum temperature occurring again. Thus the chances seem to be two to one that the maximum temperature at Killisnoo in January would be 42° rather than 40°. Again, the table shows that in July there is an even chance of the maximum temperature being 71°, or lying between 73° and 74°; whereas the chances of the maximum lying between 71° and 74° far exceed the chances that it will lie between 79° and 80°, and the chances of the temperature again reaching the observed extreme maximum of 84° is seen to be very small.

Tables of similar construction show the frequency of the various minimum temperatures and of the various numbers of rainy days in each month at Killisnoo and at Coal Harbor, and the frequency of various numbers of rainy days at Sitka.

DISCUSSION OF THE FREQUENCY TABLES FOR KILLISNOO.

FREQUENCIES OF MAXIMUM TEMPERATURES.

The table on page 179 shows the following general features: During the period covered by the table the highest temperature reached was 84°, in the month of July, and this once only. The most frequent yearly maximum is seen to have been 71°, characteristic of five years out of the nineteen recorded; but a maximum of either 74° or 75° was reached during seven years out of nineteen. Hence it may be inferred that the maximum for any year is more likely to fall between 74° and 75° than to hit upon 71°.

Some months show the magnitude of the individual frequencies and the magnitude of the sum of several frequencies; the more frequent temperatures tend to fall within certain limits, e. g., 46° to 49° in November. Other months seem characterized by the low magnitudes of the individual frequencies and also by a scattering of them over a greater range, e. g., May. It seems to be a fair and logical interpretation of these features to conclude that future temperature maxima (or minima) will exhibit much the same characters as those of the past, and that one may expect to find the future temperatures coming close to those which in the past have been most often attained. In the case of a month like May at Killisnoo, on the other hand, the table gives no ground for expecting the maximum to fall, with even a moderate degree of certainty, within a group of limited range. Taken month by month the table shows that January is most likely to have a maximum temperature between 39° and 42° (eleven times), preferably 42° (six times), but that there is an almost equal chance for the maximum

Table of frequencies of absolute maximum temperatures at Killisnoo.

[Period covered: May, 1881, to February 23, 1885; June 8, 1885, to October 31, 1885; March–December, 1886; January–March, September–December, 1888, and January 1, 1889, to December 31, 1902.]

° F.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
85													
84							1						1
83													
82													
81								1					
80							1						1
79							2						2
78													
77													
76					1	2							
75							1	2					3
74						3	2	1					4
73							2						
72						1	3	4					1
71					1	2	4	2					5
70						2	1	3					1
69					1	1	1	1	1				
68					1	3		3					1
67							1		2				
66					1		1	1					
65					2	2		1	1				
64					2				3				
63				1	1	1		1	4				
62				1	1				3				
61					2				2				
60					2	2			3	1			
59									1				
58				1					1				
57										2			
56				1	2					3			
55				2	1					3			
54					1					4		1	
53				1						1	1	1	
52	2		1	2						3	1		
51			1							2	2		
50		1	2							2			
49			2								4	1	
48				4							1		
47	2	1		1							5	1	
46			2	3							2		
45		4	3	1							1	2	
44	1	2	2								1	2	
43	1		4								1	2	
42	6	3	2								1	2	
41		5										5	
40	3											3	
39	2	1											
38	1	2											
37	1												
Years observ'd	19	19	19	17	19	19	20	20	21	21	20	20	19

to lie between 37° and 40° (seven times). In February the maximum has most frequently fallen between 41° and 42° (eight times), and almost as frequently (six times) between 44° and 45°, while the extreme of 50° has been reached but once. During March the maximum temperature has occurred by far the largest number of times (thirteen) between 42° and 45°, and has shown very little preference for 43° (four times), while the highest temperature, 52°, has been reached but once. In April the maximum is seen to fall more frequently in the interval between 45° and 48° (eight times) than in any other similar interval. There seem to be two secondary groups, however, with a frequency of three each at 52°–53° and 55°–56°. The extreme maximum of 63° was reached but once. The table shows a very decided rise (12°) in the absolute values of the most frequent maximum temperature on passing from April to May. In the latter month these temperatures show only a moderately developed tendency to group themselves together; the most frequent single maxima occurred only twice each in nineteen years, and these were five in number. The frequency numbers show their strongest grouping (ten times) between 60° and 65°, with a slight tendency to subdivide at 60° to 61° and 64° to 65° (each four times). The extreme maximum was 76° (once).

From June on the maximum temperatures draw together again into more limited and more sharply defined groups. For June they are distinctly grouped between 68° and 71° (eight times), but the most frequent single temperature within the group, viz, 68° (three times), is matched by an isolated maximum of 74° and almost equaled by the extreme maximum, 76° (two times).

The highest maximum temperature for the period of the table was 84°, and occurred in July (once), but the most frequent maxima for this month lie between 71° and 74° (eleven times), with a distinct preference for 71° and 72° (seven times together).

The extreme maximum of August, 81°, is several degrees lower than that for July, as is the grouping of the most frequent maximum, viz, 68° to 72° (thirteen times). The grouping of the frequencies within the latter limits does not show so great a difference from those for July. In August the most frequent single maximum was 72° (four times), 1° higher than that for July, while the general preference seems to have been for the interval 70° to 72° (nine times), or 1° lower than that for July.

The more frequent maximum temperatures now again begin to decrease rapidly. In September they are well grouped between 60° and 64° (fifteen times), with some preference for 63° (four times), and but one occurrence of an extreme maximum of 69° only, and one each of 58° and 59°.

In October the frequencies are not so closely grouped. They come between 57° and 50° (twenty times), with a concentration between 54° (four times) and 55° (three times). The extreme maximum was 60° (once).

November was characterized by a slight scattering of the maxima, shown by the fact that the grouping between 46° and 49° (twelve times) includes little more than one-half the total occurrences for the month. The occurrences outside this group usually have frequencies of only 1, and inside the group are distinctly concentrated at 47° (five times) and 49° (four times).

December shows a somewhat greater scattering of the maxima, the total range being from 54° (once) to 40° (three times), but does not match January in this respect. The table shows, however, that the December maximum has a well-developed tendency to fall between 45° and 40° (sixteen times), with a marked concentration of frequencies at 41° (five times) and 40° (three times).

FREQUENCIES OF MINIMUM TEMPERATURES AT KILLISNOO.

The table of frequencies of absolute minimum temperatures at Killisnoo (p. 182), was constructed on the same principle as the foregoing one. It has somewhat more interest for the farmer since it is the unexpected occurrence of extremely low temperatures which most often plays havoc with his crops.

The column headed "Year" shows that in every one of the twenty years of record the extreme minimum temperature fell as low as 11°, and in fifteen years fell as low as 4° or even lower. The most frequent extreme minimum fell between 4° and 2° (eight times) but this proportion of the total number of years, 40 per cent, is not a sufficient basis for any very positive expectations. The fact of chief importance is that the extreme minimum temperature is sure to fall as low as 11°.

A study of the individual months is best left to the reader, but a few important features may be pointed out. The first feature to attract attention is the marked scattering and small magnitude of the frequencies shown by the minimum temperatures in the winter months, contrasting strongly with the marked grouping and higher magnitudes shown in the summer months. This indicates that the probable extremes of the next winter can not be closely estimated; they have been too uncertain in the past; while the much more important summer minimum can be more closely predicted.

The table shows clearly that all of July and August may be counted upon as safe growing months, for their minimum temperatures very rarely fall below 40° and usually remain closer to 42°. In the spring it is apparent that temperatures injurious to growing plants are sure to be met with through April, and that May is very subject to freezing temperatures, the minimum of this month usually falling between 34° and 29° (fifteen times in nineteen years), and often reaching 32° to 34° (nine times).

Passing to the fall months, the grouping of the minima within well-defined limits during September and October is at once striking. During September the minimum falls most frequently in the group between 37° and 34° (eleven out of twenty-one times), but has also shown preference for 31° (six times); while in October there are two well-defined groups, viz, 32° to 30° (eight times) and 28° to 25° (thirteen times). From these facts it is evident that September is not likely to favor crops for more than half its days, and that October is sure to put a stop to the further maturing of all crops.

Table of frequencies of the absolute minimum temperatures at Killisnoo.

[Periods: May 1, 1881, to February 28, 1885; June 8, 1885, to October 31, 1885; March to December, 1886; January to March and September to December, 1888; and January 1, 1889, to December 31, 1902.]

° F.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
47							1						
46							1						
45							2	1					
44							2						
43							1						
42							6	4					
41						1	1	6					
40						1	4	5					
39						2	1	1					
38						3	1	2	1				
37						3			2				
36						4		1	4				
35						3			3				
34					3	2			2				
33				1	1	1							
32					5					2			
31					2				6	4			
30					2				1	2	1		
29				1	2				1				
28										4		1	
27				3					1	3			
26				4	2					3		1	
25					1					3	1		
24			2	2	1						1	1	
23	1		2	2							1		
22			1	1									
21	1			1							2	1	
20												1	
19		1		1							2		
18			1								3		
17	1		1										
16			1								1	2	
15			3	1							1	1	
14			1								1		
13	2										1	2	
12	1		1								1		
11	2	2											1
10	1	3	1								2	2	1
9	1	2										2	1
8			1									3	1
7		2											1
6	1		1									1	1
5	1												
4	2	2	1										5
3	1	1											1
2		2										1	2
1	2	1									1	1	1
0	1	1	1										1
− 1													
− 2	1		1										2
− 3													
− 4													
− 5													
− 6													
− 7													
− 8													
− 9		1											1
−10		1											1
Years observed	19	19	19	17	19	20	20	20	21	21	19	20	

FREQUENCIES OF RAINY DAYS AT KILLISNOO.

The foregoing tables deal with the frequency of occurrence of various temperatures, but as no average or mean maximum and minimum temperatures had been calculated there was no opportunity to compare these values, which are the ones usually given, with the most frequently recurring temperatures. In the following table of frequencies of numbers of rainy days at Killisnoo, direct comparison may be made between the most frequent number of rainy days in each month and the "Mean numbers" which are given in the last line of the table.

Table of frequencies of the number of days having 0.01 inch or more of rain at Killisnoo.

[From January 1, 1889, to December 31, 1902. The asterisk (*) indicates mean number of days with rain.]

No. of days.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
31												
30												
29												
28								1		1	1	
27			1							1		
26			1						1	1		
25								1	2	2		
24								1			1	
23	1	2								**3**		2
22	1								1	*1		
21	1		1	1			1			1	2	**3**
20	**3**							1		1		1
19	1	1			1			1	***3**			**3**
18	*1	**3**	1	1				1	**3**		2	*
17	2	1	**2**	1	**2**			**2**	1	1	*	1
16				1	1	1	1	*	1	2	**3**	
15	1	*	*1		**2**	**2**	2		1		2	2
14					1			**2**	1			1
13	1	1	1	**4**			1	1				
12	1	2	**2**		*	**2**	*1				1	
11		1		*		1	**4**				1	
10		1	1		**2**	**2**	1	1				1
9	1				1	*1		1				
8		1	1	1	1		1					
7		1	**2**	2	1	**2**	1					
6				1	1	1					1	
5												
4						1	1	1				
3				1		1						
2												
1												
0												
Years observed	14	14	14	13	14	14	14	14	14	14	14	14
Mean number of days	18.0	14.9	15.0	11.0	12.3	9.0	11.7	16.5	19.3	22.3	16.9	17.6

The table shows two facts very clearly, viz, that the same number of rainy days in a given month recurs much less frequently than does a maximum or a minimum temperature; and second, that the mean number of rainy days does not necessarily coincide with the most frequently recurring number of rainy days. Concerning these relationships between means and "Scheitelwerte" or most frequently recurring values, Professor Hann says[a] that when temperature "Scheitelwerte" for each ten years of observations, or even larger periods, are compared with the corresponding means, there is found to be "extraordinary variations among the 'Scheitelwerte' and a marked coincidence among the means." In April the most frequently recurring number of rainy days is thirteen, while eleven is the mean number of rainy days as calculated in the usual way from the individual observations. According to the usual custom, April of next year should be expected to have about eleven rainy days. A study of the April column, however, in this table shows that one-third of all the observations in April have shown thirteen rainy days as characteristic of April, whereas April has never had eleven rainy days, but has in four years had numbers of rainy days lying between six and eight. Then from the frequencies, as shown in this table, it would seem fair to conclude that the best chance for any given succeeding year is for April to have thirteen rainy days, and that the second best chance is for April to have a number of rainy days lying between six and eight, probably seven, and that there would apparently be no chance for April to have ten, eleven, or twelve rainy days, the number of rainy days lying closest to the so-called mean number of rainy days. We may illustrate this feature of these tables again by considering the number of rainy days in December. The mean, calculated in the usual way, assigns to December 17.6 rainy days. The table of frequencies, however, shows that the most frequent number of rainy days in December lies between nineteen and twenty-one, with preponderating values for nineteen and twenty-one. In other words, the chance would seem to be more in favor of December having twenty rainy days rather than seventeen rainy days at Killisnoo.

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[a] Hann, J., Lehrbuch der Meteorologie, Wien, 1902, p. 115.

FREQUENCY TABLE FOR SITKA.

FREQUENCIES OF RAINY DAYS.

A table similar in character to the last one for Killisnoo has also been constructed for Sitka as follows:

Table of frequencies of the number of days having 0.01 inch or more of rain at Sitka.

[Periods: Nov. 1, 1867, to May 31, 1877; Apr. 1, 1881, to Sept. 30, 1887, and July 1, 1898, to Dec. 31, 1902. The asterisk (*) indicates mean number of days with rain.]

Number of days rain.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
31												
30												
29			1								1	
28								1		2		1
27								1		2		
26		1			1				1	1		
25		1	2					1	2	1	1	4
24	1			1					1	1	2	2
23	1						1		1	1	3	1
22	2	1	2	1				1		*1		1
21	1	2	1	1			2	2	2		1	2
20	1	1	1	3	5	1	2		2	5	*4	
19	3	1	4	1	1		2	2	3	2	1	*1
18	1		*1	1		2			*1		1	1
17	*1	2		3	2	1		3	1	1		
16	3	*	1	*	*4	5	2	*	3		1	1
15		2	1	3	1	2	*3		1	2	2	1
14		2		1	2	*2	2	4	2		3	1
13	3	3	1		2	1	1	1	1	1	1	1
12			1	3			1	3				
11			1	2	2							1
10	2	1		1			2	1				2
9		1	2			2						1
8						2	2	1				
7		2										
6	1				1	2	1					
5												
4												
3												
2												
1												
Years observed	20	20	19	21	21	20	21	21	21	20	21	21
Mean number of days	16.8	15.9	18.0	16.2	16.1	13.6	14.9	16.8	19.5	21.7	19.5	18.9

This table is for a period of twenty-one years, which coincides in part with the period of fourteen years used in the Killisnoo period. Here, again, the difference between the average number or rainy days and the most frequent number in each month may be seen most clearly in the case of December, but also in October and March.

FREQUENCY TABLES FOR COAL HARBOR, UNGA ISLAND.

Similar tables, compiled for Coal Harbor, are given below:

Table of frequencies of the absolute maximum temperatures at Coal Harbor, Unga Island.

[Occurrence: During the intervals Sept., 1889, to Sept., 1890; and Aug., 1891, to Oct. 15, 1902.]

°F.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
79							1						2
78							1						1
77													
76							*1						1
75								*1					
74													
73							1						1
72							2	1	*1				2
71						1		1					
70								*1					
69						1	2	3					3
68						3	1	1					1
67					*1			1	1				
66						1	1		3				
65				*1		2	1	1	2				1
64								1	3				
63									1				
62					1	1		1	2				
61						1							
60						1		1	*1	1			
59				1						1	1		
58					2					1			
57					4	1							
56											1		
55					1					4			
54					1					3			
53			1	1						2			
52													
51		1									1		
50			1	4	1						2	1	
49		3	1								1		
48		1	5	2						1	3	1	
47	1			1							2	1	
46	2		1	1							*1	3	
45	3	1	1	1	1							1	
44	1	1	1									1	
43		3											
42	4	1		1								1	
41												*1	
40			1									2	
39													
38													
37													
36		1											
35													
34	1												

*Occurrences marked thus indicate temperatures from daily readings at 7 a. m., 2 p. m., and 9 p. m. All others were obtained from self-registering instruments.

Frequencies of absolute (or observed) minimum temperatures at Coal Harbor, Unga Island.

[Periods: Sept. 1, 1889, to Sept. 31, 1890, and Aug. 1, 1891, to Sept. 31, 1902. The asterisk (*) indicates values from daily observations at 7 a. m., 2 p. m., 9 p. m.]

° F.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
50								*1					
45													
44													
43								1					
42							1	3					
41													
40							4	3					
39							3	2					
38						1	3	2					
37						2	1						
36						2			1				
35									6				
34									2				
33						1		1	2				
32					1	3			2				
31										2			
30						1							
29					2	1				1			
28					2					2			
27										1			
26										1			
25				1	1					2	1		
24					1					2			
23					1								
22				1	1						*1		
21											1	1	
20					1								
19											1	1	
18		1									3	1	
17		2		1							2		
16		1		1							2	1	
15			1	1	1	1				1		1	
14											1	1	
13			*1									1	
12			1	2	1								
11	1												
10	1		1	1					1				
9			1										
8	*1			*1								1	
7	1		1										1
6		*1		*1								1	
5	1		1	1								1	
4		*1	1	1									
3		2											1
2	1		1										
1	*1											*1	
0	1	1	1										1
−1													
−2	1	1										1	2
−3													
−4													
−5	1												
−6	1		*1										2
−7													
−8													
−9	1												1
−10		1											
−11			1										1
−12		1											1

Table of frequencies of days having 0.01 inch rain or melted snow in each month, and the year, at Coal Harbor, Unga Island.

[From Jan. 1, 1894, to Dec. 31, 1902.]

Number of days.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
25												
24								1				
23									1		1	
22												1
21						1						
20	1		1	1						2		
19		2	2		1					1		1
18	2								2	1	2	
17				1					1	1	1	1
16				1		1		1	1	1	1	
15				1	1		2	1	1		1	1
14	2	2	1	1	3		2	2		1		
13	2	1	1	1				1	1	1		1
12	1	1	1			1			1			1
11			1			2			1	1		1
10				1	1	1	1	1				
9	1		2					1			1	1
8				1	1			1			1	
7		1					3					
6		1		1	2	1	1				1	1
5												
4						1						
3						1						
2												
1												
0												
Mean number days	14.5	13.0	14.0	13.2	11.8	10.4	10.6	13.6	15.9	16.4	14.4	13.8

RAINFALL AT ALASKA STATIONS.

In the rainfall tables the following abbreviations and symbols are used: ( ) inclose figures not used in compiling synoptic tables; ? signifies figures whose accuracy is doubted; $\frac{5\text{–}31}{0.30}$ indicates that the 0.30 inch fell on the days from 5th to 31st, both inclusive; > indicates that the sum following is, from the original records, evidently too small; < indicates that the sum following is probably too large; $\frac{25\text{ da.}}{0.75}$ indicates that the given sum (0.75 inch) is from 25 observations only during the month and therefore incomplete; $^{R}2.65$ indicates that the number shows only *rainfall*, snowfall *not* included; [0.73], an interpolated mean. Where the fragments of two successive years overlap by one or more months, as in the case of Nuchek, the averages only of the duplicating months were used in determining the annual rainfall.

Summary of records of precipitation (in inches) at stations in Alaska.

ANVIK.

[Lat. 62° 37′ N. Long. 160° 08′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1882	.....	.....	.....	.....	.....	.....	.....	.....	(12 da / 0.48)	0.86	2.20	(20 da / 0.17)	.....
1883	1.27	0.26	29 da / 1.70	0.40	27 da / 0.51	.....	.....	(11-31 / 2.75)	3.33	2.43	1.40	(18 da / 0.30)	.....
1884	2.40	0.34	0.83	0.25	0.91	(1-9 / 0.46)	.....	.....	4-30 / 2.31	0.29	0.68	(1-17 / 0.56)	.....
1885	0.32	0.52	1.78	0.98	0.47	.....	.....	.....	.....	.....	.....	.....	.....

ATKA ISLAND.

[Lat. 52° 15′ N. Long. 174° 15′ W.]

1879	.....	.....	.....	.....	7-31 / 4.49	1.76	4.25	8.01	.....	.....	.....	.....	.....
1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.30	10.90	13.46	.....
1882	11.45	8.20	8.40	5.40	4.47	4.40	4.63	5.43	9.16	12.18	8.87	2.52	85.11
1883	7.65	3.43	3.60	4.86	8.19	4.20	3.88	4.83	9.71	10.05	14.72	8.85	83.97
1884	8.01	10.31	7.14	5.97	6.46	5.10	11.62	3.78	8.20	12.74	11.85	6.26	97.44
1885	9.10	3.94	1.76	10.41	(1-12 / 2.56)	.....	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	7.08	7.07	2.01	6.30	.....	.....	.....	.....	.....

ATTU ISLAND.

[Lat. 52° 58′ N. Long. 172° 26′ W.]

1880	.....	.....	.....	.....	.....	.....	(22-31 / 0)	4.62	4.06	8.91	6.46	6.52	.....
1881	5.29	3.01	2.60?	2.16	(1-12 / 1.20)	.....	.....	.....	.....	.....	.....	.....	.....

BERING ISLAND.

[Lat. 52° 12′ N. Long. 165° 55′ E.]

1882	.....	.....	.....	.....	(22-31 / 0)	2.07	1.45	1.07	1.32	3.29	2.23	2.21	.....
1883	0.61	2.98	0.61	1.03	0.38	2.71	2.09	3.43	3.67	2.52	2.16	1.72	23.91
1884	0.94	1.49	1.44	1.38	1.31	0.26	2.27	1.71	1.70	3.26	3.39	0.96	20.11
1885	0.58	0.39	0.25	0.86	1.19	1.63	4.05	30 da / 2.15	3.32	1.34	4.08	1.61	21.45
1886	0.66	1.50	1.33	1.25	(1-6 / 0)	.....	.....	.....	.....	.....	.....	.....	.....

CAMP COLONNA.

[Lat. 67° 25′ N. Long. 141° 00′ W.]

1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	(13-31 / 0.17)	0.41	1.17	.....
1890	0.68	2.08	0.81	0.12	0.60	0.27	(1-14 / 0.01)	.....	.....	.....	.....	.....	.....

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

CAMP DAVIDSON.

[Lat. 64° 40′ N. Long. 141° 00′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1890	.....	.....	.....	.....	0.63	2.21	1.74	2.96	2.41	0.22	0.72	0.33	13.42
1891	0.59	0.86	0.22	0.61	0.48	(1–21 / 0.48)	.....	.....	.....	.....	.....	.....	

CARMEL MISSION (NUSHAGAK).

[Lat. 58° 57′ N. Long. 158° 21′ W.]

1902	1.98	.....	2.17?	>2.11	1.30	0.40	3.00	.....	.....	.....	.....	.....	.....

CHERNOFSKI.

[Lat. 53° 25′ N. Long. 167° 14′ W.]

1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.24	6.76	>6.50	.....

CHILKAT (PYRAMID HARBOR).

[Lat. 59° 20′ N. Long. 135° 25′ W.]

1883	.....	.....	.....	.....	0.84	2.66	1.60	2.19	5.11	1.98	4.79	6.89	.....
1884	3.30	4.90	5.76	[a] 0.98	2.94	1.06	1.14	1.52	2.44	2.58	7.17	6.23	39.00
1885	0.68	0.93	1.80	0.71	0.08	0.32	0.01	0.31	0.45	3.36	1.14	1.51	11.30
1886	0.76	4.99	0.21	0.09	0.32	0.12	.....	.....	.....	.....	.....	.....	.....

CHILKOOT (PORTAGE BAY).

[Lat. 69° 26′ N. Long. 136° 28′ W. Station probably located near the present Haines Mission.]

1881	.....	.....	.....	.....	.....	.....	.....	.....	(18–31 / 2.28)	7.63	6.95	7.68	.....
1882	8.77	18.99	1.34	3.04	1.55	2.45	1.95	2.94	8.00	7.55	10.31	6.52	72.41
1883	1.29	5.48	5.93	1.13	.....	.....	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	0.22	0.29	0.86	1.07	0.70	0.18	.....

CIRCLE.

[Lat. 65° 50′ N. Long. 144° 04′ W. The accuracy of queried values is doubtful; they are one-tenth of recorded snowfalls.]

1897	(1.53?	0.10?	0. ?	1.10?	1.45?)	0.70	2.30	(1.50?	1.65?	1.15?	0.10?	0.40?)	.....
1898	(0.20?	0.40?	1.60?	0.75?	0.75?)	0.39	.....	.....	.....	.....	(0.50?	0.40?)	.....
1899	(0.41?	0.10?	0.20?)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1900	.....	.....	.....	.....	.....	.....	1.66	2.72	.....	.....	.....	.....	.....

COAL HARBOR, UNGA ISLAND.

[Lat. 65° 20′ N. Long. 160° 38′ W.]

1893	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.94	.....
1894	3.05	1.56	2.74	0.91	5.20	4.40	0.88	6.17	4.21	4.48	5.89	5.55	44.04
1895	2.94	3.68	5.42	8.00	2.09	1.69	2.46	3.17	2.03	8.15	7.30	4.46	61.39
1896	1.02	6.08	4.80	1.69	2.74	2.15	3.93	6.79	11.41	5.23	2.60	3.79	52.23
1897	4.90	5.00?	2.88	3.85	0.71	2.36	1.70	1.46	3.76	6.82	12.90	6.82	63.15
1898	6.59	1.39	8.70	3.21	2.02	7.08	3.59	2.23	1.07	0.73	0.64?	3.71?	40.96
1899	3.30	3.77	4.28	1.82	3.72	0.39	6.51	4.42	4.99	5.06	1.91	1.25	41.42
1900	3.37	5.41	2.22	18.28	2.24	1.88	2.91	5.74	4.65	5.36	7.98	3.21	63.25
1901	3.95	6.57	1.99	3.65	0.67	2.21	1.64	1.63	2.80	7.46	3.54	8.87	44.87
1902	6.54	4.64	6.34	4.77	2.98	0.33	1.70?	3.05	5.88	4.74	6.87	1.20	48.04

[a] The exposure of the rain gage changed on the 1st of this month.

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

COPPER CENTER.

[Lat. 61° 58′ N. Long. 146° 20′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1902	.....	.....	.....	.....	.....	.....	(18–31 / 0.90)	1.08	0.73	2.02	1.60	0.20	.....

EAGLE.

[Lat. 64° 45′ N. Long. 141° 10′ W.]

1882	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.58	0.38	0.69	.....
1883	0.74	0.45	1.01	0.44	(1–9 / 0)	.....	.....	.....	.....	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	.....	.....	(22–31 / 0.36)	1.65	0.27	0.87	0.40	.....
1885	0.28	0.70	0.41	0.92	(1–12 / 0.21)	.....	.....	(16–31 / 0.48)	0.96	1.32	1.27	0.22	.....
1886	0.19	1.23	0.36	1.19	(1–19 / 0.47)	.....	.....	.....	.....	.....	.....	.....	.....
1899	.....	.....	.....	.....	.....	.....	.....	(16–31 / 1.63)	0.39	0.65	0.52	0.26	.....
1900	0.52	0.39	0.02	0.42	0.84	1.57	1.88	2.71	1.72	1.23	0.21	0.77	12.28
1901 *a*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.24	0.19	.....
1902 *a*	.....	T.	0.17	0.84	0.64	1.15	2.56	1.28	0.65	0.77	0.62	0.51	(>9.19)

FORT ALEXANDER.

[Lat. 58° 57′ N. Long. 158° 21′ W.]

1881	.....	.....	.....	.....	.....	.....	.....	2.86	3.75	1.91	3.38	1.44	.....
1882	4.80	1.42	2.72	0.47	1.76	1.18	2.86	3.90	5.33	3.58	6.53	2.10	36.65
1883	6.63	1.24	4.21	1.49	2.46	2.24	.....	.....	.....	.....	.....	.....	} 35.05
1884	.....	.....	.....	.....	.....	(15–30 / 0.10)	6.10	2.19	6.69	0.33	1.04	0.43	
1885	0.26	0.00	2.45	3.41	3.12	2.21	3.43	8.99	4.16	2.13	0.43	1.46	32.05
1886	1.06	1.63	2.85	1.31	2.39	(1–12 / 0.62)	.....	.....	.....	.....	.....	.....	.....

FORT LISCUM.

[Lat. 61° 05′ N. Long. 146° 20′ W.]

1901	9.40	0.80	6.38	6.20	1.45	1.13	4.77	16.20	12.72	10.31	6.28	7.47	83.11
1902	9.94	1.28	4.70	2.80	3.08	0.24	3.65	8.56	15.72	18.20	6.98	4.43?	79.58

FORT RELIANCE.

[Lat. 64° 10′ N. Long. 139° 30′ W.]

1882	.....	.....	.....	.....	.....	.....	.....	.....	0.80	0.26	0.76	0.44	.....
1883	1.61	0.27	0.32	0.07	(1–8 / 0.00)	.....	.....	.....	.....	.....	.....	.....	.....
1885	.....	.....	.....	.....	.....	.....	.....	.....	(17–30 / T.)	0.48	0.71	0.42	.....
1886	0.39	1.24	0.14	0.08	(1–29 / 0.69)	.....	.....	.....	.....	.....	.....	.....	.....

a Records kept at Fort Egbert military post.

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

FORT TONGASS.

[Lat. 54° 46′ N. Long. 130° 30′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1868	.....	.....	.....	.....	.....	1.81	8.45	0.45	2.78	8.68?	17.92	10.40	.....
1869	12.00	9.98	5.75	9.87	5.30	6.89	5.87	6.44	12.51	19.54	13.00	16.26	123.41
1870	13.84	11.61	10.58	9.28?	10.10	4.63	6.85	6.53	18.84	.....	.....	.....	.....

FORT WRANGELL.

[Lat. 56° 28′ N. Long. 132° 20′ W.]

1868	.....	.....	.....	.....	(11–31 / 0.90)	1.90	4.20	1.00	.....	.....	.....	.....	.....
1869	.....	.....	.....	7.27	5.11	5.06	4.60	3.50	6.66	11.13	3.69	7.39	56.00
1870	3.43	2.26	1.25	2.94	2.63	3.90	2.35	3.05	(1–26 / 14.02)	.....	.....	.....	
1876	.....	.....	.....	.....	.....	[3.56]	2.56	4.91	5.16	5.76	11.75	12.36	76.75
1877	8.71	12.92	3.54	2.13	3.39	(1–14 / 1.85)	.....	.....	.....	.....	.....	.....	
1881	.....	.....	.....	.....	.....	.....	.....	(25–31 / 0.13)	8.06	5.19	18.37	11.49	.....
1882	.....	9.14	3.87	(8 da / 1.39)	(21 da / 1.48)	3.40	4.76	2.91	.....	.....	.....	.....	.....

FORT YUKON.

[Lat. 66° 34′ N. Long. 145° 18′ W. This record seems to be of doubtful accuracy.]

1899	.....	.....	.....	.....	.....	.....	.....	.....	16–30 / 0.10	0.60?	0.27?	0.47?	.....
1900	0.36	T	0.42?	0.05?	.....	1.19	0.32	30 da / 1.47	28 da / 0.74	0.60	0.51	0.24	.....
1901	1.95?	0.03	0.38?	0.56	0.46	0.41	.....	.....	.....	.....	.....	.....	.....
1902	0.88?	0.01?	0.05?	0.58?	0.01?	.....	.....	0.74?	1.51?	2.37?	1.60?	0.75?	.....

GAMBELL (ST. LAWRENCE ISLAND).

[Lat. 63° 50′ N. Long. 171° 25′ W.]

1895	.....	.....	.....	.....	0.14?	0.59	26 da / 0.42	1.08	1.92	0.48?	.....	.....	.....
1896	>0.60	.....	.....	.....	.....	>1.26	0.89	3.63	>2.66	>0.75?	.....	.....	.....
1897	.....	.....	>0.60?	.....	>0.35	0.59	0.42	1.67	1–25 / 1.56?	.....	.....	.....	.....
1898	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	>2.50?	.....	.....
1902	.....	.....	.....	.....	.....	29 da / 0.72	2.13	25 da / 1.75	26 da / 1.23	.....	.....	.....	.....

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

HOLY CROSS MISSION.

[Lat. 62° 16′ N. Long. 159° 50′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1893										5.08	0.67	3.57	
1894	3.53	0.56	1.81	0.52	0.21	1.75			1.79	2.12	0.65	2.40	
1895	0.79	1.03	1.37	0.11	0.37	0.99	2.19	2.65	1.71	0.69	2.23	0.59	14.72
1896	0.01	29 da / 1.07?	1.34	1.67	0.20	1.93	2.63	3.90	1.83				17.37
1897						0.46	1.14	a22 da / >2.18	a25 da / 1.66?	1.45	1.04	1.79	
1898	1.94?	1.07?	>3.29	>1.21	0.20	2.89?	3.34	2.96	2.43	0.23	1.19?	1.15?	>21.90?
1899	0.51?	1.05?	1.49?	0.97?	0.33			3.67	4.40	1.17?	0.49	1.00	
1900	0.74?	29 da / 0.57	0.50	0.50	0.92	1.67	1.44	6.76	6.69	3.34	1.98	4.49?	28.60?
1901	1.46	2.46	1.06?	0.55	0.13	0.85	0.92	4.50					

HOWKAN.

[Lat. 54° 45′ N. Long. 132° 30′ W.]

1882										25 da / 18.56?	26 da / 14.21?	28 da / 19.63?	

JUNEAU (1).

[Lat. 58° 19′ N. Long. 134° 28′ W.]

1881						23 da / 3.37	6.65	3.03	14.61	8.00	12.95		
1882	9.50	4.55	6.25										
1883					7.46	8.98	9.41	11.23	8.42	8.74	9.93	12.05	107.65
1884	10.94	29 da / 5.40	9.64	4.49	13.11	4.04	6.32	8.03	13.30	11.39			
1889											(13–30 / 8.15)	5.40	
1890	3.22	6.55	5.89	4.94	4.85	6.37	5.51	2.21	17.11	11.31	18.46	6.86	93.28
1891	20.51	2.68	5.68	6.32	4.01	2.22	2.37	13.01	10.30	11.19	10.44	7.03	95.76
1892	13.67												
1894											(16–30 / 3.27)	7.22	
1895	5.80					(17–30 / 3.63)	3.23	7.66	7.53				
1896									14.08	9.70	0.58	10.39	
1897		5.08											

JUNEAU (2) (WHARF).

[Lat. 58° 19′ N. Long. 134° 28′ W.]

1898												8.10	
1899	4.22	4.92	1.58	4.28	4.68	5.63	1.06	4.88	9.10	11.90	6.71	8.42	67.38
1900	8.52	4.19	3.06	11.37	6.00	2.21	5.19	6.57	10.84	10.91	12.45	7.87	88.18
1901	9.57	6.32	8.19	8.19	3.47	2.13	1.98	14.04?	11.41	16.50	3.62	13.33	98.65
1902	12.76	2.08	5.64	4.34	3.99	2.41	7.60	12.10	14.24	6.57	7.38	4.26	83.37

a These values not used in computing total for 1896–97.

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

IKOGMUT (Russian mission).

[Lat. 61° 56′ N. Long. 160° 43′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1883	.....	.....	.....	.....	.....	.....	.....	(18–31/2.85)	27 da/5.17	5.69	3.94	1.50	.....
1884	1.46	29 da/0.55	0.81	0.81	(7–31/0.81)	.....	.....	(16–31/0.98)	.....	9–31/0.09	1.30	0.65	.....
1885	0.58	0.40	1.48	0.71	1.42	.....	.....	.....	5–30/0.98	1.53	1.07	(1–18/0.91)	.....
1886	(23–31/0.00)	0.20	1.68	0.31	5–31/3.13	.....	.....	.....	.....	.....	.....	.....	.....

KENAI.

[Lat. 60° 32′ N. Long. 151° 19′ W.]

1882	.....	.....	.....	.....	.....	.....	.....	.....	(12 da/1.33)	27 da/0.92	1.99	0.31	.....
1883	0.71	0.66	1.30	0.39	1.47	1.88	2.21	1.56	0.80	2.85	2.53	0.95	17.31
1884	1.15	29 da/0.96	0.85	27 da/0.37	1.18	[0.73]	1.42	2.79	2.54	0.41	0.63	0.58	>13.61
1885	0.66	0.62	1.98	1.43	0.54	0.60	2.62	4.80	1.16	1.37	1.14	1.61	18.53
1886	T	1.87	1.50	1.24	2.98	.....	.....	.....	.....	.....	.....	.....	.....
1899	.....	.....	.....	.....	0.82	0.68	1.36	2.34	.....	4.32	0.32	0.67	.....
1900	1.47	0.31	0.31	0.52	0.37	0.55	0.86	3.92	3.34	2.19	0.90	1.15	15.89
1901	0.64	0.07	0.32	0.85	0.30	0.06	1.66	4.85	2.23	1.69	0.64	0.19	13.50
1902	0.84	0.44	0.50	1.03	0.42	0.59	1.71	2.92	4.69	2.73	0.86	1.55	18.26

KETCHIKAN.

[Lat. 52° 25′ N. Long. 131° 38′ W.]

1902	.....	.....	.....	.....	23–31/2.79	3.31	5.62	.....	.....	.....	.....	.....	.....

KILLISNOO.[a]

[Lat. 57° 22′ N. Long. 134° 29′ W.]

1881	.....	.....	.....	.....	20 da/5.00	1.36	2.68	2.09	29 da/3.79	3.03	7.13	7.97	.....
1882	6.38	7.01	1.51	1.88	2.47	2.02	2.78	2.38	3.44	25 da/0.55	21 da/>1.10	3.19	[94.1]
1883	1.69	1.01	3.25	1.17	0.82	2.47	30 da/2.44	4.87	3.70	28 da/2.85	1–16/2.88	.....	.....
1884	.....	.....	.....	0.50?	3.81	>1.29	0.87	4.13	3.49	6.61	22 da/6.39	3.67	.....
1885	29 da/1.85	.....	.....	.....	.....	8–30/0.49?	1.00?	2.05?	4.89?	6.29?	.....	.....	.....
1886	[5.6]	[5.0]	3.36	0.48	28 da/0.64	7–30/0.57	1.54	4.05	5.85	9.85	8.25	5.55	[51.0]
1887	(Records existed for this year, but could not be found.)												
1888	2.05	29 da/4.15	2.30	.....	.....	.....	.....	.....	7.35	10.78	8.56	3.85	.....
1889	4.45	3.35	3.45	3.40	2.95	1.85	1.85	6.40	5.75	4.70	4.75	2.40	44.80

[a] The values on pp. 162–165 are based on the years 1889 to 1902 only.

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

KILLISNOO—Continued.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1890	2.05	4.60	4.20	0.90	2.40	0.30	6.02	1.95	12.80	7.55	8.80	3.00	54.57
1891	8.35	2.70	7.05	5.95	4.40	0.40	3.35	6.65	8.25	7.95	3.24	5.20	63.49
1892	8.40	29 da / 7.30	9.30	[3.50]	3.25	4.60	5.95	6.75	9.65	12.45	9.80	13.26	[94.10]
1893	8.10	3.70	3.66	3.30	5.35	2.85	8.15	9.90	8.35	9.60	4.10	4.95	72.00
1894	5.85	8.25	7.70	4.20	2.85	3.15	3.95	5.60	6.05	6.15	5.35	4.05	62.15
1896	3.25	7.30	2.50	4.20	1.70	3.35	3.35	6.95	6.45	8.45	4.45	8.55	60.50
1896	7.50	29 da / 8.26	2.30	0.65	0.80	3.25	2.05	3.40	8.95	10.55	1.30	8.25	57.25
1897	5.45?	3.40	2.70	4.35	8.40	1.50	5.30	4.65	13.15	11.95	4.25	4.60	69.70
1898	4.40	3.80	2.45	6.80	2.90	1.05	4.30	1.30	6.35	5.90	6.50	6.95	52.70
1899	6.41	4.80	2.00	1.60	1.40	3.20	0.90	1.95	7.40	30 da / 5.95	6.30	3.45	45.36
1900	5.55	29 da / 3.35	2.40	6.85	2.20	4.30	8.45	2.30	4.25	6.00	7.05	6.50	59.20
1901	6.95	6.05	5.40	1.15	4.00	1.60	1.40	5.95	5.50	9.10	3.55	5.30	55.95
1902	29 da / 6.95?	2.65	1.50	2.10	4.70	1.60	3.80	4.80	7.20	4.60	2.75	2.90	45.55

KISKA ISLAND.

[Lat. 52° 00′ N. Long. 177° 25′ E.]

1885	.....	.....	.....	.....	13–31 / 3.94	3.38	6.39	8.10	4.31	7.67	6.28	2.65	>51.26
1886	2.06	0.93	3.40	2.25	.....	.....	.....	.....	.....	.....	.....	.....	

KODIAK (1).[a]

[Lat. 57° 48′ N. Long. 152° 25′ W.]

1868	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	R12.65	.....
1869	R2.65	R4.11?	R9.83	6.86	8.68	7.15	0.79?	3.89	5.94	7.14	6.61	9.90	73.55
1870	8.01	3.31	10.60	5.08	3.16	2.90	1.49	3.53	1–16 / 0.84	.....	.....	.....	.....
1898	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.38	5.72	47.11
1899	4.82	4.44	4.17?	2.92	4.97	2.11	0.80	2.37	1–29 / 1.95	6.31	29 da / 5.67	.....	

KODIAK (2) (WOODY ISLAND).

[Lat. 57° 48′ N. Long. 152° 25′ ? W.]

1900	5–31 / 2.95	6.19	7.46	29 da / 2.60	6.62	3.35	30 da / 6.64	2.64	.....	(25 da / 1.86)	2.28	4.73	.....
1901	2.62	0.30	3.85	(19 da / 4.20?)	3.45	4.50	3.56	5.13	5.98	8.95	4.82	11.10	.....
1902	3.89	6.29	4.33	3.26?	5.55	1.55	1.87?	6.15?	(25 da / 3.13?)	.....	(24 da / 0.75)	(27 da / 4.20)	.....

[a] The values on pp. 162–166 are for 1898–99 only.

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

KOLMAKOF.

[Lat. 61° 30′ N. Long. 158° 59′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1882	.....	.....	.....	.....	.....	.....	(10 da / 0.11)	(21 da / 3.85)	27 da / 2.43	1.14	(19 da / 10.97)	27 da / 3.65	.....
1883	1.34	1.08	(22 da / 0.56)	(27 da / 0.60)	(18 da / 0.07)	.....	.....	30 da / 7.36	4.54	3.53	4.14	1.11	.....
1884	2.30	29 da / 0.29	1.41	1.08	(22 da / 1.27)	.....	(6–31 / 2.30)	(17 da / 1.47)	4.12	(20 da / 0.94)	(21 da / 0.93)	(1–5 / 0.29)	.....
1885	(17–31 / 0.39)	0.42	(8–31 / 1.05)	1.39	.....	.....	.....	(17 da / 5.67)	(18–30 / 0.03)	30 da / 0.06	1.50	0.63	.....
1886	0.22	0.30	0.95	0.18	(1–14 / 0.68)	.....	.....	.....	.....	.....	.....	.....	.....

METLAKATLA.

[Lat. 55° 10′ N. Long. 131° 30′ N.]

1891	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.31	18.00	.....
1892	15.48	6.45	9.79	6.52	5.90	4.27	4.73	9.37	8.38	30 da / 18.75	9.70	12.79	112.13
1893	14.81	8.97	4.88	3.41	10.84	2.50	7.18	6.87	8.09	12.81	9.69	13.04	103.09
1894	7.48	16.03	8.10	10.56	5.22	2.53	7.97	[8.2]	[8.2]	[15.8]	[11.2]	[14.6]	[115.9]

MORZHOVOI.

[Lat. 55° 03′ N. Long. 163° 10′ W.]

1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.38	2.31	.....
1882	11.78	4.04	2.05	2.45	(1–7 / 0.90)	.....	8–31 / 2.67	5.02	7.51	1–27 / 10.26	7.47	0.60	.....
1883	>3.25	1.85	2.85	0.49	1–24 / 5.56	.....	.....	.....	.....	.....	.....	.....	.....

NOME.

[Lat. 64° 30′ N. Long. 165° 25′ W.]

1900	.....	.....	.....	.....	.....	.....	.....	13–31 / 0.60	7.00	.....	.....	.....	.....

NUCHEK.

[Lat. 60° 23′ N. Long. 146° 40′ W.]

1883	.....	.....	.....	.....	13.00	6.47	8.72	10.81	22.96	21.50	10.51	16.81	190.09
1884	27.07	29 da / 9.15	18.02	16.92	24.84	1.88	11.14	17.46	.....	.....	.....	.....	

NULATO.

[Lat. 64° 41′ N. Long. 157° 58′ W.]

1882	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.62	3.76	(1–16 / 0)	.....
1894	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.36	1.20	1.42	.....
1895	0.68	1.09	0.89	0.16	0.36	(1–8 / 0.24)	.....	.....	.....	.....	.....	.....	.....
1896	3–31 / T	29 da / 0.73	2.03	(1–19 / 0.27)	.....	.....	.....	.....	.....	.....	.....	.....	.....

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

OMALIK.

[Lat. 65° 02′ N. Long. 162° 40′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1884	(20-31 / 0.57)	29 da / 0.23	0.09	0.07	0.02	.....	.....	.....	.....	0.23?	0.45?	0.18?	.....
1885	0.40?	0.40?	>0.21?	(1-16 / 0.32°)	.....	.....	.....	.....	.....	.....	.....	.....	.....

ORCA.

[Lat. 60° 35′ N. Long. 145° 40′ W.]

1899	.....	.....	.....	.....	.....	.....	.....	.....	(13-30 / 14.30)	17.87	13.02	9.95	.....
1900	9.73	9.93	15.74	16.35	13.70	4.59	5.06	11.25	15.32	9.78	4.72	13.09	129.31
1901	16.17	1.21	16.91	.....	.....	.....	30 da / 3.62	30 da / 27.02	26.36	24.71	8.02	9.75	.....
1902	12.02	8.05	0.60	.....	.....	.....	.....	.....	(17-30 / 12.71)	35.56	11.10	11.40	.....

POINT HOPE (NEAR TIKIRA).

[Lat. 68° 25′ N. Long. 166° 38′ W.]

1894	.....	.....	.....	.....	.....	.....	.....	28 da. / 1.59	1.19	0.42	1.37	3.22	.....
1895	0.05	0.03	0.42	0.04	0.43	0.19	0.27	30 da. / 0.45	1.77	0.09	0.13	0.05	3.92
1896	0.05	29 da. / 0.04	0.57	0.51	0.00?	0.83	1.49	.....	.....	.....	.....	.....	.....

ST. MICHAEL.

[Lat. 63° 28′ N. Long. 162° 10′ W.]

1877	.....	.....	.....	.....	.....	.....	(15-31 / 0.67)	2.48	2.23	0.27	0.52	0.11	.....
1878	0.11	0.12	0.12?	0.44	2.59	1.40	3.48	2.16	2.29	0.66	0.95	1.86	16.18
1880	.....	.....	.....	.....	.....	.....	0.65	4.05	5.61	2.38	1.48	1.31	[20.1]
1881	0.06	0.00	0.01	0.39	2.66	0.65	0.89	4.43	3.40	2.14	1.75	0.23	16.61
1882	1.88	0.40	0.28	0.04	0.18	0.25	(1-16 / 0.17)	(27-31 / 0.17)	1.70	1.74	1.27	0.12	[13.66]
1883	2.63	0.34	0.96	0.50	0.63	1.84	3.13	3.80	4.48	1.66	1.06	0.70	21.73
1884	0.57	29 da / 0.17	0.78	0.26	0.25	0.77	4.00	1.40	5.04	1.46	0.60	0.20	15.50
1885	0.38	0.31	1.07	0.77	1.04	3.51	3.06	4.56	3.39	1.62	0.42	0.75	20.88
1886	0.43	0.34	0.46	0.12	1.53	1.77	.....	.....	.....	.....	.....	.....	[18.1]

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

ST. PAUL ISLAND.

[Lat. 57° 15′ N. Long. 170° 10′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1869 *a*	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.92?	2.40?	1.70?	.....
1870 *a*	1.00?	1.02?	0.82?	1.10?	0.88?	0.14?	.....	.....	.....	.....	.....	.....	.....
1876	.....	.....	.....	.....	.....	.....	29 da / 2.73	.....	.....	.....	.....	.....	.....
1878	.....	.....	.....	.....	.....	.....	.....	.....	(20–30 / 1.23)	9.89	4.92	8.14	.....
1879	7.32	3.00	1.92	4.58	3.82	.....	.....	.....	.....	.....	.....	.....	.....
1881	.....	.....	.....	.....	.....	2.22?	2.10?	4.49?	7.94	5.88	7.81	3.04	.....
1882	.....	1.86	2.88	1.71	1.68	1.02	3.49	2.30	5.89	6.55	6.44	0.66	36.59
1883	2.54	0.48	4.18	0.51	2.10	.....	.....	.....	.....	.....	.....	.....	
1892 *b*	.....	.....	.....	.....	.....	.....	.....	.....	3.88	2.91	2.84	3.13	.....
1893 *b*	1.62	2.86	3.79	3.28	1.85	1.76	2.55	1.96	1.35	R >1.49	2.71?	>2.99?	>28.21?
1894 *b*	>2.46?	2.23?	>4.23	2.29?	>3.06?	>2.22?	>1.99?	>1.93	.....	.....	.....	.....	.....

SITKA.

[Lat. 57° 03′ N. Long. 135° 19′ W.]

1867	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.62	3.24	.....
1868	7.00	29 da. / 4.35	5.72	2.27	7.55	1.93	4.20	4.01	6.81	7.27	9.38	6.69	67.18
1869	10.14	14.80	6.30	8.99	6.87	4.99	3.20	3.84	7.62	9.50	7.12	10.84	94.21
1870	9.97	6.05	6.00	4.51	3.35	4.94	2.44	6.39	9.16	9.46	11.58	7.55	81.40
1871	3.00	3.22	4.74	4.00	1.90	6.00	2.79	13.33	7.70	14.54	5.36	3.54	70.12
1872	5.84	29 da. / 2.07	8.59	>2.38	3.18	3.70	3.43	2.65	6.13	8.85	6.58	5.97	59.37
1873	8.40	7.96	3.87	2.83	1.67	2.67	1.54	7.54	5.09	17.98	9.02	5.75	74.32
1874	2.74	5.87	2.27	2.23	2.04	3.43	3.40	2.50	15.70	14.84	4.84	10.27	70.13
1875	3.06	7.90	5.94	11.81	1.69	3.14	3.57	5.30	10.43	13.84	5.41	11.66	83.75
1876	9.03	29 da. / 2.89	4.29	3.72	3.19	2.62	3.12	5.52	6.36	9.82	9.15	17.97	77.68
1877	9.98	8.76	1.97	4.35	2.45?	.....	.....	.....	.....	.....	.....	.....	.....
1881	.....	.....	.....	4.21	3.10	1.54	4.40	1.98	12.11	5.04	13.50	10.52	.....
1882	14.20	16.35	3.53	4.21	2.89	3.71	6.68	6.33	9.67	9.64	11.47	13.58	102.26
1883	4.69	6.92	16.00	4.78	3.70	4.13	6.38	9.16	8.13	13.31	10.63	14.54	102.37
1884	14.01	29 da. / 6.15	11.05	2.76	10.35	3.77	4.78	6.91	13.20	14.56	16.31	7.09	110.94
1885	10.42	9.86	12.10	13.42	3.55	2.36	3.85	4.00	8.33	13.55	9.65	11.70	102.79
1886	7.36	18.84	10.08	7.67	3.68	4.53	3.27	10.72	25.52	24.82	20.51	3.26	140.26
1887	7.83	4.92	7.38	6.64	7.30	5.01	7.62	9.38	10.55	(1–8 / 1.61)	.....	.....	.....
1898	.....	.....	.....	.....	.....	(15–31 / 1.39)	3.97	3.92	5.98	8.22	13.47	10.99	.....
1899	5.75	10.38	[6.70]	8–30 / 3.76	4.02	4.99	2.27	8.35	8.52	9.85	7.02	6.94	[78.7]
1900	8.71	3.49	2.62	12.09	4.56	3.13	3.77	7.92	28 da. / 7.82	10.73	9.39	6.59	80.82
1901	9.33	6.38	7.80	7.17	4.86	1.26	0.45	10.03	8.82	15.59	6.16	10.18	88.03
1902	11.92	2.25	5.39	4.93	6.10	1.87	7.35	14.96	13.43	8.25	6.19	5.93	88.57

a These observations were recorded, in cubic centimeters (cc), and have been converted to depth of rainfall in inches by multiplying by $\frac{1}{165}$. This factor was obtained by assuming the rain gage to have been a De Witt conical 9-inch gage, with 5-inch aperture, such as was regularly supplied to the U. S. Army post hospitals, and by assuming that the rainfall was poured from the gage into a glass graduate reading in cubic centimeters.

b The records for these years not used in compiling the synoptic tables.

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

SKAGWAY.

[Lat. 59° 28′ N. Long. 135° 20′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1898	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.56	7.85	.....
1899	0.94	0.88	0.13	0.66	1.07	1.29	0.59	.....	5.28	2.99	2.72	1.44	[>17.99]
1900	0.86	0.26	1.15	4.12	0.12	0.20	1.70	T	.....	.....	.....	.....	.....
1901	.....	.....	.....	.....	.....	.....	.....	.....	(14–30/1.22)	4.92	.....	.....	.....
1902	.....	.....	.....	.....	0.13	0.30	2.89	3.03	1.66	1.75	1.24	2.06	.....

TANANA (FORT ADAMS).

[Lat. 65° 10′ N. Long. 152° 45′ W.]

1882	.....	.....	.....	.....	.....	.....	.....	2.16	1.72	0.50	0.82	0.46	.....
1883	1.72	1.22	0.40	0.40	(1–22/0.67)	.....	.....	.....	1.10	2.59	2.75	0.86	.....
1884	3.16	1.03	0.97	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1885	.....	.....	.....	.....	.....	.....	.....	(18–31/0.23)	1.53	4.40	3.42	1.15	.....
1886	0.20	0.31	0.66	0.04	1.51	.....	.....	.....	.....	.....	.....	.....	.....

TANANA (FORT GIBBON).

[Lat. 65° 12′ N. Long. 152° 00′ W.]

1902	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.57	0.14	1.36	.....

TELLER (REINDEER STATION).

[Lat. 65° 20′ N. Long. 166° 30′ W.]

1901	.....	.....	.....	.....	.....	.....	.....	.....	T	.....	.....	.....	.....
1902	0.06?	0.01	0.09	0.20?	0.00?	0.12?	2.98	1.18	.....	.....	.....	.....	.....

TYONOK.

[Lat. 61° 03′ N. Long. 151° 10′ W.]

1898	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.85	1.41	.....
1899	1.29	1.35?	0.65	1.23	1.05	1.20	1.69	2.72	5.51	4.70	0.58?	0.73?	22.70
1900	2.69	0.52	0.47	0.60	0.29	0.72	1.05	4.94	4.22	2.53	0.60	1.54	20.17
1901	1.55	0.20	0.62	1.00	0.04	0.53	2.68	5.77	3.16	4.42?	0.45	1.13	21.55
1902	3.08	0.52	1.09	0.71	0.38	0.00	2.93	5.40	6.56?	4.96	0.94	1.72	28.29

UGASHIK.

[Lat. 57° 35′ N. Long. 157° 50′ W.]

1883	.....	.....	.....	.....	.....	.....	.....	(5.19)	.....	.....	(11–30/0.80)	(0.91)	.....
1884	1.66	29 da./0.34	1.00	0.53	28 da./1.26	0.21	2.72	2.26	7.05	2.99	2.07	1.12	23.21
1885	1.22	0.65	1.08	1.75	1–26/1.74	2.08	3.08	4.77	3.99	2.41	0.78	2.11	25.66
1886	(1–18/2.53?)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Summary of records of precipitation (in inches) at stations in Alaska—Continued.

UNALASKA.

[Lat. 53° 52′ N. Long. 166° 31′ W.]

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1878	.....	.....	.....	.....	.....	.....	.....	.....	2.59	3.97	3.79	9.92	.....
1879	2.88	1.35	3.26	1-28 / 2.93	.....	.....	.....	.....	17-31 / 0.37	6.98	6.56	2.68	.....
1880	4.11	3.32	3.28	1.18	.....	.....	.....	.....	.....	.....	.....	.....	.....
1881	.....	.....	.....	.....	.....	.....	2.60	2.12	9.16	27.30	11.82	12.70	.....
1882	14.30	7.97	5.84	2.19	4.51	3.84	2.12	1.88	11.48	10.00	9.30	7.37	80.80
1883	17.78	2.88	10.36	5.77	10.85	1.48	1.70	4.74	9.75	6.15	5.02	13.64	90.12
1884	11.93	29 da. / 26.19	9.44	14.00	3.97	12.41	4.31	4.90	11.23	11.85	19.89	28.17	158.29
1885	29.87	4.42	8.42	12.40	1.47	2.03	4.15	3.34	7.64	17.60	8.75	8.08	108.17
1886	15.82	7.64	4.74	14.09	(1-22 / 3.71)	.....	.....	.....	.....	.....	.....	.....	.....

UTKIAVI (GOVERNMENT STATION NEAR POINT BARROW).

[Lat. 71° 17′ N. Long. 156° 40′ W.]

1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	(17-31 / 0.96)	0.73	0.44	.....
1882	0.45	0.04	0.51	0.41	0.44	0.63	1.47	1.46	1.10	1.09	0.34	0.24	8.18
1883	0.14	0.84	0.14	0.54	0.31	0.31	1.04	.....	.....	.....	.....	.....	.....
1901	.....	.....	.....	.....	.....	.....	.....	.....	0.13?	0.42?	0.10?	<0.10?	3.45
1902	T	<0.20	<0.05	T	T	0.46	1.51	0.48	.....	.....	.....	.....	

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